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PAUL PARROT

EDUCATIONAL OBJECTIVE OF PUBLIC HEALTH NURSING
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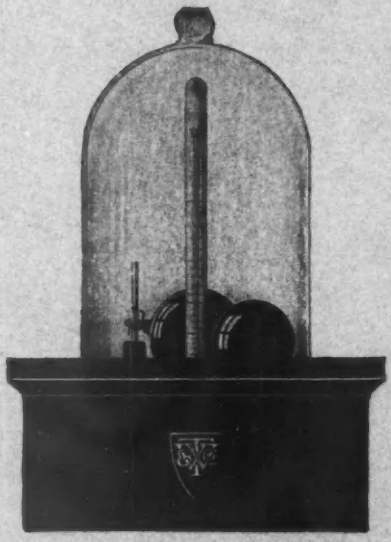

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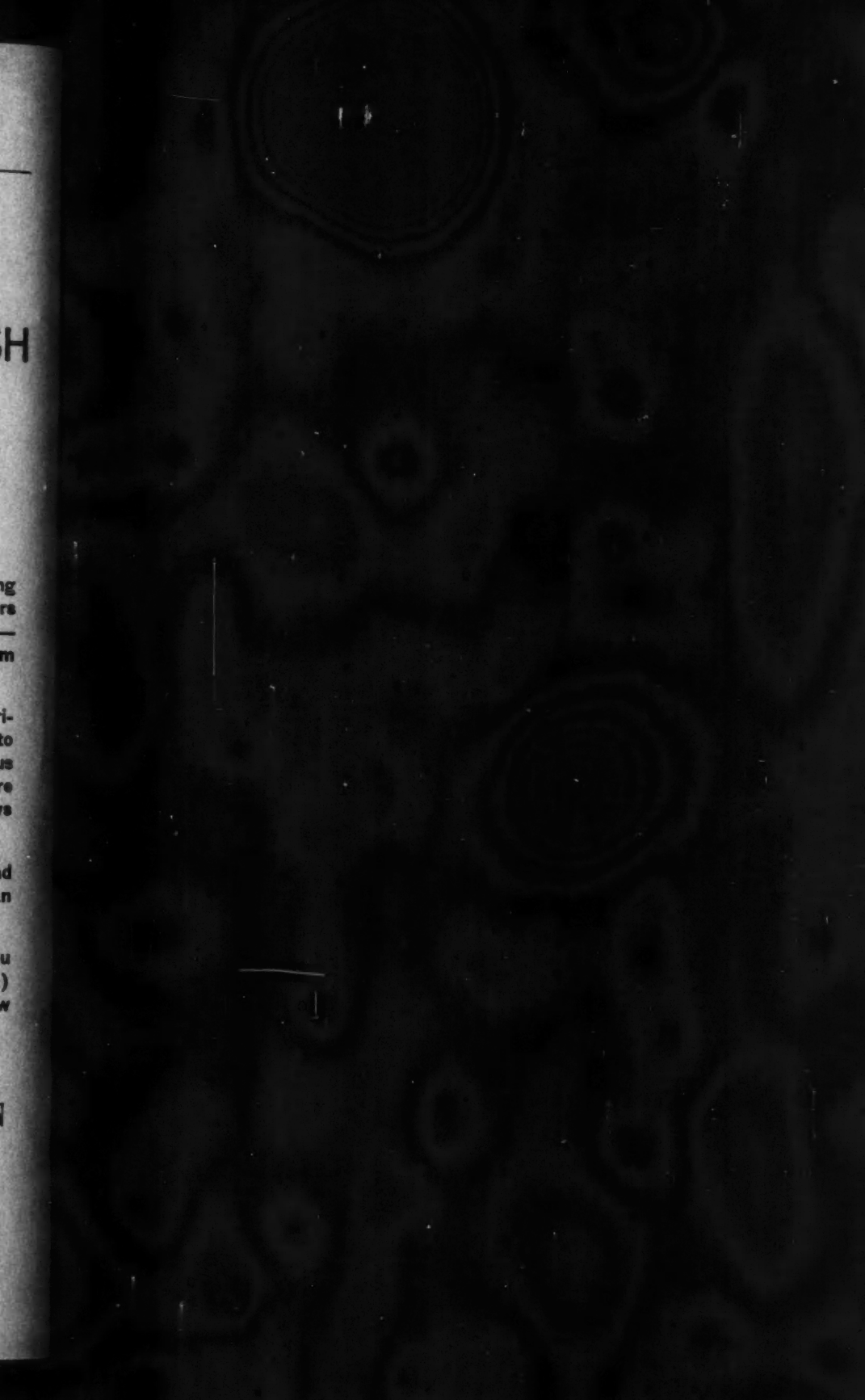

CANADIAN PUBLIC HEALTH JOURNAL

VOL. 25 September, 1934 No. 9

Presidential Address*

PUBLIC HEALTH PROGRESS IN QUEBEC

ALPHONSE LESSARD, M.D.

Director, Provincial Bureau of Health, Quebec

THE greatest problem that a governmental health authority has to solve is, without question, that of applied rural hygiene. I mean by this the provision for the whole area of an organization which is fitted for the task and which yields satisfactory results.

I think I am right in saying that, except in periods of widespread epidemics (such as that of cholera in 1832 and 1834, of typhus in 1849 and of smallpox in 1885), provision for rural hygiene had been left entirely to the initiative of the municipalities until 1887, the date of the formation of the first provincial health organization in Quebec.

Immediately upon taking up its duties, the Provincial Board of Health found that, although the Legislature had, in 1860, granted municipalities ample powers, few had taken advantage of them. To combat this inertia, the Provincial Board of Health obtained the power both to order each municipality to appoint a local health board and to make regulations which the municipalities were required to execute or to have executed. The results were not satisfactory and the Board, in order to follow more closely the health work in the municipalities and to assist them in case of need, obtained from the government authorization to divide the province into ten health districts, each district to be placed under the supervision of a trained health officer.

Despite all these efforts it finally had to be acknowledged that, as a rule, the local rural health board was a failure. This was not surprising, for these small municipalities could not, when thus separately organized, obtain the services of a competent person to be placed at the head of the local health board. In order to carry on in the firing line adequate equipment is necessary: the leader must be a qualified hygienist. But the training of a qualified hygienist includes the study of several sciences: medicine, bacteriology, chemistry, sanitary engineering, geology, health legislation, and statistics. A physician, however good a practitioner he may be, cannot be considered professionally qualified in public health. His medical studies have given him sufficient knowledge of public hygiene to enable him to appreciate its value and to co-operate with the health authorities, but more than this cannot be

**Presented at the Twenty-Third Annual Meeting of the Canadian Public Health Association, Montreal, June, 1934.*

asked of him. Furthermore, the medical profession already admits of a large number of specialties; why should it not similarly recognize the field of public health?

In order to enable the municipalities to pay the salary of a professional health officer, the Health Act was amended in 1919 to permit municipalities to unite for the purpose of having a common health department, but none took advantage of it. A radical change was necessary; the anaemic small health boards had to be replaced by a county health organization. With his usual solicitude for all that concerns health, the Honourable Mr. David, whose ministry includes public health, agreed that the time was come to institute such a movement.

The plan was that, in exchange for a modest financial contribution from the County Council and certain rights and privileges which the municipalities would consent to relinquish to the government, the latter would assume the charge of all the health work in the county, the government itself choosing the personnel of the county health unit, consisting usually of a Doctor of Public Health, two public health nurses, a sanitary inspector and a secretary-stenographer. The Rockefeller Foundation became interested in the movement and generously gave us most valued encouragement in the form of a grant for the first three years of operation of each of the units.

The first county health unit was established in 1926 in Beauce county and was soon followed by three others. The results obtained demonstrated that such units would be a success in our province as they had been elsewhere, and to-day 38 counties of the 55 possible in the entire province are organized. In other words, about seven-tenths of the project has been realized.

We shall not falter in our chosen path. All signs indicate that before long we shall have the complement of the 55 units. There is really no doubt on this score. In the first place, the health budget is one of the last which the Quebec government desires to reduce in the present period of economic crisis. Furthermore, as heretofore all our health units have been formed either upon the request or with the consent of the County Councils, it is probable that, with the passing of the financial depression, the remainder of the counties, appreciating the results obtained by their neighbours favoured with health units, will solicit the government for the same advantages. Finally, should hesitancy to enter the fold of health efficiency which we have constructed be anywhere manifested, the government may, by virtue of the 1933 amendments to the Health Units Act, establish a unit, if it judges the time opportune, and have it include any city of less than 20,000 population if, in the opinion of the Provincial Secretary, its health organization is unsatisfactory.

Action resulting from this provision will be facilitated if the criterion set forth in the French health law is accepted. The government of France is authorized to intervene in any locality where, for three consecutive years, the death-rate exceeds the average rate for the whole of the country. Following the same idea, we might compare the death-rate of an unorganized county with the average rate of the counties having established health units.

The health units are under the immediate control of the Director of the Provincial Bureau of Health, with the Assistant Director as Supervisor. The work of the units includes practically everything done by the well-organized city bureau of health; namely, control of infectious diseases, with particular emphasis placed on epidemiological investigation; sanitation of dwellings (homes, educational institutions, public buildings, factories, etc.); child hygiene (pre-natal, infant, pre-school and school, consultations with expectant mothers, travelling clinics for babies, medical inspection of schools, colleges and convents, including verification of smallpox vaccination); travelling and stationary clinics (dispensaries) for tuberculosis, conducted by specialists; general sanitation (water, sewerage, nuisances); and food inspection (milk, meat, etc.).

Moreover, on the establishment of a unit, vaccines and sera to combat smallpox, diphtheria, typhoid fever and tetanus are distributed free of charge to the medical profession in the county. Finally, during the past three years, immunization against diphtheria has been practised systematically; the number of children immunized in our rural sections is 160,000, and it is intended to continue this practice. I may add that the City of Montreal is also doing this immunization work on a very large scale.

Despite the dryness of figures, I must nevertheless employ them to show you the results obtained by the county units:

General Death-rate per 1,000 population:
In 1930, entire province: 12.7 deaths
In 1933, counties *with units*: 10.1 deaths
counties *without units*: 12.3 deaths

Tuberculosis per 100,000 of population:
In 1926, entire province: 118.0 deaths
In 1933, counties *with units*: 95.6 deaths
counties *without units*: 101.9 deaths.

Other Infectious Diseases (smallpox, diphtheria, scarlet-fever, typhoid, measles, whooping cough, poliomyelitis, epidemic cerebro-spinal meningitis, influenza):
In 1930, *entire province*: 68.4 deaths
In 1933, counties *with units*: 32.3 deaths
counties *without units*: 58.2 deaths

Infant mortality, per 1,000 births:
In 1930, entire province: 141 deaths
In 1933, counties *with units*: 85.4 deaths
counties *without units*: 113.3 deaths

The remarkable reduction in the infant death-rate in the territory served by units suggests a parenthesis at this point.

Given that the birth-rate in the province is extremely high—30 per 1,000 of population before the depression (the average fecundity of the French Canadian woman, according to data gathered a few years ago, was 9.19 children, our people evidently taking seriously the direction of very high authority: "Increase and multiply")—since it has now been demonstrated that it is possible to save fifty more children per 1,000 living births than formerly, are we not justified in expecting, as a result of simple natural increase, that the growth in the population of the province will be still more rapid than in the past?

THE CENTRAL ORGANIZATION OF THE PROVINCIAL BUREAU

Division of General Inspection (1888)

It is to this division, the oldest of all, that are attached the District Inspectors who serve those counties which are not provided with health units. The task of these inspectors is an arduous one; for, unlike the unit officers, they must deal with municipalities which retain their autonomy, and too often *retained autonomy* means *constant resistance.*

Division of Statistics (1894)

In 1926, in response to the invitation of the Federal government to join the "Registration Area" which already included those provinces not having to make such adjustment, the old forms used since 1894 for reporting births, marriages and deaths were replaced by forms identical with those employed in the other provinces. Since it is the work of this division that is most completely reflected in the annual reports of the Provincial Bureau of Health, I need not dwell on its great importance.

As this is a year of anniversary celebrations and memories of older times are being recalled, I would speak of the age of the basis of our statistics: the registration of births, marriages and deaths. This registration has existed in our province for over 300 years and has been carried on without interruption to our day. At the very beginning of the colonization of "La Nouvelle France" the priests and missionaries kept these registers for religious purposes. In 1667, Louis XIV, by royal order, decreed that these registers should henceforth be kept in duplicate, one copy to be transmitted to the "Juge Royal". This order was repeated in the form of a law at the time of the English Succession and we find it to-day in our Civil Code. That method of registration is still used and when, about 40 years ago, the old Board of Health wished to compile vital statistics in its own office, only a *complementary* law, a regulation concerning merely the transmission of statistical reports, had to be edicted by our Legislature, no change being required in the secular law of registration. These registers have been so well kept by the clergy throughout the centuries that Abbé Tanguay was enabled to compile his "Geneological Dictionary of Canadian Families", with the aid of which any family of French origin may determine its geneological tree, going back to the first ancestor from France. This work (7 volumes) is probably the only one of its kind in the world.

Division of Laboratories (1894)

Established in 1894, the work of the division is now conducted in three sections, namely, the Laboratory of Bacteriological Diagnosis, the Laboratory of Serology, and the Laboratory of Chemistry and Sanitation. During the past fiscal year 178,320 examinations were made by this division. With the progress in laboratory science, greater precision and exactitude have been introduced into the routine, resulting in increased reliability of the findings. Not only to physicians is the laboratory of service, but to municipalities, as evidenced by the fact that daily laboratory reports are issued on the operation

of 47 filtration and 31 quarantine plants in the province. These reports are communicated immediately to the Division of Sanitary Engineering.

Division of Sanitary Engineering (1908)

This division furnishes the Director of the Bureau information upon which he exercises the powers given him by the Health Act for the supervision of water supply, sewerage systems, water filtration and sewage treatment plants, milk pasteurization, and cross-connections between public and private services. The control of the Director includes approval of plans, ordering of necessary improvements to existing installations, replacement of incompetent operators of water, sewage or milk plants and, where necessary, the requirement, through the Public Utilities Commission, of action by two or more neighbouring municipalities to provide water supply or other sanitary works.

At the present time over 80 per cent of the water supply, including more than 90 per cent of the surface water supply, is treated before use. In the larger cities a total of 85,000 gallons of milk is pasteurized daily, serving 1,400,000 persons representing nearly one half the population of the province.

Other duties of this division include the solution of problems connected with sanitation of dwellings; suppression of nuisances presenting technical difficulty; general sanitation; approval of ice-fields; swimming-pools and bathing places; and summer camps. (Tourist camps are under the general supervision of the Bureau of Hotels but control of their water supplies is the responsibility of the Provincial Bureau of Health.)

Division of Venereal Diseases (1920)

This division has suffered considerable hardship through the action of the Federal Government in discontinuing to assist in financing it conjointly with our Provincial Government. Nevertheless, although its resources are limited to the provincial subsidy, the division has thus far succeeded, with the aid of the hospitals, in maintaining the 80 treatment centres established. The following figures, taken from the report for the year 1932, show the importance of the fight against venereal diseases. During the year 44,651 patients were admitted to clinics, including 20,887 new patients. Of these new patients it is interesting to learn that 11, 243 were found to be free of venereal disease. Consultations and treatments to the number of 319,916 were provided and 86,537 laboratory examinations were made at the Provincial Laboratory and 16,180 in various hospital laboratories. The social studies of the cases revealed the following sources of infection: commercialized prostitution, 37 per cent; clandestine prostitution, 43 per cent; marriage, 7 per cent; congenital, accidental or unknown, 13 per cent.

Division of Epidemiology (1931)

The Division of Epidemiology was created in 1931, being placed under the direction of a trained epidemiologist. The need for the division had long been recognized and the services already rendered by the epidemiologist in

charge of the department led us to believe that had he been available in 1927 the Provincial Treasury would have saved a considerable portion of the money which the severe typhoid epidemic in Montreal cost the province.

Mention may be made of a rather advanced piece of legislation which was incorporated in the Health Act at the last session of the legislature and which will prove of great assistance in the control of typhoid and diphtheria. The section reads as follows:

"When, upon investigation, it is found that typhoid fever or diphtheria exists in epidemic form in a municipality or in a community of persons, or that such municipality of community is menaced by the presence in the neighbourhood of such disease, the Lieutenant-Governor-in-Council may, upon the request of the Director of the Provincial Bureau of Health, and under such conditions as he may consider advisable, order the population concerned either to be vaccinated against typhoid fever or immunized against diphtheria, as the case may be."

Tuberculosis Control

We are not satisfied with having a tuberculosis mortality greater than that in other provinces. We are combating this disease with every means available. Instead of the 400 beds for the tuberculous which we had in 1924, we now have 1900. We still need 1300 more but (thanks to my dual functions) I am sure that as soon as it is possible to do so the Department of Public Assistance will aid us to obtain this addition. Twenty district tuberculosis and child welfare dispensaries have been established and in those counties provided with health units the Provincial Bureau of Health maintains travelling clinics, under the direction of specialists, for the early diagnosis of the disease.

Considering the needs of the urban population and taking our inspiration from what has been done in France, we have introduced the system of "Foster Emplacement" of the Grancher type, in order to remove young children (of 2 and 3 years) from the possibility of massive infection by a mother or father suffering from open tuberculosis and often living in very insanitary dwellings. The child is placed with the family of a farmer who has no children of his own or whose children have grown up and left the farm. There he is raised as a little country child and goes to the district school. Later, as usually happens in France, there is great probability that he will remain on the land, a farmer like his foster father, healthy, robust and never again menaced by the danger to which he would have been exposed had he remained in the city. In France this work is a charitable institution, the government merely granting it a subsidy. Here it is conducted entirely by the Provincial Bureau of Health, the province paying all expenses including clothing, school fees, medical care, and eight dollars per month to the foster family. The choice of family is effected conjointly by the curé and the local physician. A nurse visits the children at regular intervals.

In 1931 we had 500 of these wards. With the continuance of the depression we have been limited to keeping those already placed without increasing the number; but it is intended to continue with this work as soon as conditions are more favourable.

The Visiting Nurse Association as a Community Health Asset*

RICHARD ARTHUR BOLT, M.D., DR.P.H., F.A.P.H.A.

Director of the Cleveland Child Health Association, Cleveland, Ohio

IN these trying days of economic convalescence it is salutory to take account of our community assets. The greatest asset of any country is the health of its people. By health I mean a wholeness or fullness of life, mental as well as physical, whereby the individual is able to overcome the handicaps of heredity and environment and lead a happy, productive, effective life.

Many factors contribute to health equilibrium. Some of these are inherited; others arise from the environment. Social and economic forces play no inconsiderable rôle in determining health balance. One may well ask the question: Why has the health of our people as a whole been maintained on such a high level during the last five years? General death rates have continued to decline. The infant mortality rate is exceptionally low. The tuberculosis rate has been declining gradually during the past five years. No serious epidemics have occurred to overwhelm our people.

But there are other signs to which we must look if we are to gain a clear view of the entire picture. Death rates alone do not tell the whole story. It is time to take our eyes off the death rates and place them on the damage rates.

There is no question that in many places the nutritional status of children has been sagging. This is true especially of the children in the preschool age group, where there has been relatively little well-organized work along social and public health lines to protect them. Malnutrition and undernutrition do not come to view immediately. There are evidences, however, that many of our children are gradually losing ground. They are becoming more and more sensitive; they are showing greater nervous instability; they are more difficult to adjust to our social institutions. These are subtle signs of fundamental nutritional changes. The complete breakdown may not come for several years, at which time we may expect that an increasing number of children will succumb to tuberculosis, mental instability, and delinquency.

One of the main reasons why the death rates have not increased during the period of economic depression is that our organized health forces, following well-tried paths of health promotion and disease prevention, have been able to continue to function satisfactorily. In order to accomplish this, great sacrifices have been made on the part of individuals working in our public health field. Essentials have been maintained; frills have been cut; attention has been focused upon fundamentals. A principal force playing a major part in maintaining the health structure has been our public health nursing organization.

Personal hygiene may do much to preserve the health of individuals; but personal hygiene alone cannot accomplish everything. The individual is

**Address before the 36th Annual General Meeting, Board of Governors, Victorian Order of Nurses for Canada, Ottawa, May 17, 1934.*

subject to forces in the environment over which he has little direct control. Infectious diseases are ever present; deficiency diseases may arise; water and milk supplies may spread infection; accidents may occur. In other words, there are many factors conditioning health which must be controlled through community responsibility and organization. These devolve largely upon our public health authorities. Careful plans may be laid. Administrative orders may be given; but without a well-trained and devoted personnel to carry them out, very little can be expected in promoting the health of our communities. Among the trained and skilled assistants to our public health authorities, the visiting nurse should take first place.

The Work of the Visiting Nurse

Every visiting nurse is a public health nurse, or ought to be. It is purely an academic question to argue at the present time whether a visiting nurse is a public health nurse. *Many of us are convinced that she is not only a public health nurse, but the very best type of public health nurse.* It is unfortunate that we have not been able to find a better term than "nurse" to describe thoroughly-trained, experienced, and devoted public health servants who go in and out among the homes of our people, not only ministering to their disabilities, but also teaching promotion of health and prevention of disease.

It is true that the visiting nurse is a bedside nurse; but this is only one phase of her multiform activities. Even while she is ministering to the sick, she is in an excellent position to teach prevention of disease to those in the immediate family and to indicate to the patient how she may in the future better protect her own health and that of others. Furthermore, there are many conditions bordering upon ill health which in themselves may not be considered serious but which may lead to serious consequences if not taken in time and given the best possible treatment. In her daily visits, the nurse may detect these early departures from normal and take steps to remedy them.

Importance of Adequate Training

Up to this point I have had in mind the nurse who was thoroughly equipped for her work by training and experience. How many nurses now employed in the public health field have had adequate preparation and are now taking advantage of opportunities afforded in their daily work? An answer to this question has appeared recently in the United States in a "Survey of Public Health Nursing" conducted by the National Organization for Public Health Nursing. It covered practices of 57 agencies in 28 communities. In the United States to-day there are approximately 5000 organizations giving public health nursing service with 20,000 nurses engaged in the various phases of this work.

The survey covered the qualifications of more than 800 field nurses engaged in public health nursing. It "brought out the fact that *approximately only one-third of them have had any theoretical preparation through postgraduate courses for the work they have undertaken, and that only about seven per cent have completed an accredited public health nursing course.* From this it is clear that

beyond the fundamental nursing education gained in schools of nursing, the responsibility for preparing nurses for the field of public health has fallen largely on the public health nursing agencies themselves. Similarly, in the analysis of the qualifications of nurse executives and supervisors, it is found that few of them have had any preparation or previous experience in administration or in supervision, the large majority having come from the ranks of the agencies which now employ them in these responsible capacities. The survey further reveals that this lack is not adequately being made up by provision for the introduction of new nurses to the field and for supervision and continuous staff education."

In appraising the quality of the work performed by the public health nurses, the survey rates the services in the following order:

Prenatal care
Care of the sick
Postpartum and neonatal care
Health supervision of infants
Disease prevention, including
  Tuberculosis control
  Communicable disease control
  Syphilis and gonorrhea control
Health supervision of preschool children
Health supervision of school children

It would be very helpful for all those concerned with public health nursing to make a thorough study of this report to determine how well the services for which they are responsible measure up to accepted standards.

Public Health Services

The visiting nurse association has demonstrated clearly its usefulness in the public health field. It has been the "Alma Mater" of practically every phase of public health nursing. In many communities it has been the pioneer organization which has demonstrated the importance of skilled nursing in tuberculosis work, in infant and maternal health, in the industrial field, and in the schools. In order to obtain the best results for the health of the community, the visiting nurse association has demonstrated clearly the interdependence of the nursing, medical, dental, clinical, hospital, and social service facilities. As a voluntary organization it has commanded community support and official recognition. The nursing service initiated by the visiting nurse association has been accepted by local health departments as an integral part of the public health organization.

The work of the visiting nurse associations has been flexible enough to include experimental efforts, which have proved to be of great value. This is notably so in the case of maternal and infant care. Even during the period of depression, the visiting nurse association has been able to adapt itself to changing social conditions in a manner denied to other public services. One simply has to read the suggested programs for nurses employed under the Civil Works Administration in the United States during the past year in order to appreciate the breadth of services which the public health nurse has been able to render. While to some this flexibility and extension of service

may appear a weakness, it actually has made for strength, where high standards have been maintained through proper nursing supervision. I feel safe in saying that while there has been a letting down of standards in many lines, there has been less sagging in the visiting nurse service than in any other public function.

From the standpoint of health protection to our communities, we cannot afford to allow public health nursing to decline either in standards or in the number of effective personnel. While a considerable number of private duty nurses, and registered nurses working in hospitals, have been out of employment during the past few years, this has not been so marked in many localities with the public health nurses. The need for public health nurses is more urgent than ever. The future undoubtedly will require a greater number of well-trained public health nurses.

The visiting nurse is a community asset because she has been trained to observe slight deviations from normal and to know how to correct these deviations. She has a fund of knowledge from training and experience as to the prevention of disease. She is familiar with the social forces of a community and knows the interrelations of various organizations. She is equipped to help individuals find the organization which can give them the most help. In her professional work the service which she renders is applied directly to the individual in the home, office, factory, or school. Her services are acceptable to all classes of society, all ages, and under all conditions. She cuts across all boundaries of race, religion, social and economic circumstances. She ministers to basic human needs. Her objective always is the prevention of disease and promotion of health. This objective she shares with the health officer of her community. She is in direct competition with no profession.

It is not realized generally that the public health nurse is being prepared to recognize deviations from the normal mentally. She should be in a position to help in the adjustment of personality difficulties. She can render valuable service in relation to child guidance and mental hygiene of the adult.

Maternal Mortality and Morbidity

One of the greatest public health problems of the present day is the reduction of maternal mortality and morbidity. A great deal of serious study has been put upon this problem in Canada, England, and the United States. Special studies have been made in fifteen states of the United States and have reached the public in publications by the United States Children's Bureau. The New York Academy of Medicine has just issued an exhaustive study of the subject. The Cleveland Child Health Association has published the results of its study of maternal mortality in Cleveland, Ohio. Several studies have been published in Canada, and the importance of this problem has been pointed out clearly by Canadian public health officials. The most exhaustive study of maternal mortality and morbidity which has come to my attention recently is that of Dr. J. Monroe Kerr of Glasgow, who has issued a volume on his studies in England and Scotland.

The facts are largely before us, and in the main these facts are in general

agreement. Without going into detail it may be stated that each study points out that a considerable number of puerperal deaths are preventable if suitable methods of medical, nursing, and social economics are applied. Therefore, prenatal care has been stressed as prerequisite to thoroughly satisfactory obstetric methods. Here is a public health field in which the trained public health nurse can be of the greatest benefit. Her services along this line may be applied in the following ways: She may assist the physician in prenatal, natal, and post-natal care, give prenatal instruction in the homes and in clinics and organized centers. She may act as a leader and instructor in mothercraft; she may be a supervisor and instructor of midwives, or may actually be a well-trained midwife herself, as has been provided in Canada, England and Scotland and in the Pioneer Nursing Service in Kentucky. She is the logical one to instruct mothers in simple prenatal hygiene and in preventive measures. Her services, therefore, are indispensable.

No amount of prenatal care, however, is a guarantee against hurried, bungling, or bizarre obstetrics at the time of delivery. A well-trained public health nurse can be of immeasurable assistance to the doctor in preventing certain situations which may arise at that time. As a matter of fact, the statistical data which we have been able to assemble all point in the direction that maternal mortality and morbidity is lower among mothers who have had adequate prenatal care and who have had the added protection of a well-trained visiting nurse at the bedside during delivery.

I would like especially to recommend the organization of group prenatal instruction for mothers who are coming to prenatal clinics for check-up on the part of physicians. For the past five or six years we have been developing in Cleveland a plan for prenatal instruction and mothercraft. During the last year, through the cooperation of the Academy of Medicine, this instructive nursing service has been expanded to include the patients of private physicians. Our experienced prenatal instructor has met with groups not only of the highest economic classes, who are in the hands of the most skilled obstetricians, but also those in the poorest economic circumstances, who are in the hands of general practitioners. While the maternal mortality rate in 1933 among those in Cleveland at large was 5.9 per thousand live births, the mortality rate in cases coming to these classes for prenatal instruction was only 2.1 per thousand. If we exclude abortion deaths, as we should, the Cleveland City rate was 4.8 compared with 1.7 in prenatal classes. We feel that this service, which has been demonstrated thoroughly to the people of Cleveland, should be taken over eventually as an integral part of our public health nursing service.

In summing up the functions of the visiting nurse as I have come to observe them, I may briefly mention the following: She is a real health visitor, bringing health knowledge and health cheer to the individual in the home. She is a health educator in the truest sense of the word. She is a health interpreter, interpreting the orders of the health officer, the directions of the physician, and the laws of hygiene to the individual. She is a health promoter or prospector, always seeking to find new ways of preventing illness and promoting the health of the individuals under her care.

A Summary of the Results of Treatment in Early Syphilis*

E. J. TROW, M.B., F.R.C.P.(C.), NOBLE BLACK, M.B., and H. H. ELLIOTT, M.B.

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EVALUATION of the clinical results obtained in the treatment of syphilis, particularly early syphilis, in various clinics is essential if progress is to be made in its control. The opportunity for such a study was afforded in the special treatment clinic of the Toronto General Hospital, in which suitable records were available for a period of more than 20 years. This clinic was established in 1913. An additional advantage lay in the fact that the personnel of the clinic had remained practically unchanged. Further, in Ontario venereal disease legislation, which is of such importance in this subject, is embodied in an excellent Act.

The survey included all cases of early syphilis reporting or referred to the clinic during the period 1919 to 1931 inclusive. All the cases included have been under observation for at least one year. The total number of cases included in the survey was 652.

A survey of the incidence of venereal diseases made in Toronto by Fenwick (1929) showed an incidence rate for syphilis of 5.6 per 1,000. The data were obtained through questionnaires to physicians and clinics, 98 per cent of the physicians and all the clinics replying. It indicated that 54 per cent of the cases were treated in clinics and 46 per cent by private physicians. (During the present survey it was noted that 62 per cent are now treated in clinics and 38 per cent by private physicians, an increase from the earlier survey.)

Through the co-operation of the School of Hygiene, University of Toronto, the analysis of the information was made by means of punch cards. The details of the method used for recording and analyzing the data are given in the appendix. It is the intention of the clinic to carry on this system of recording so that analyses may be readily made at intervals.

Social Aspects of the Problem

The clinic possesses an excellent social service department. Data of value were transferred to the punch cards, permitting of future detailed study. A few of the points of special interest were that two-thirds of the cases were single people, three-fifths of the cases were between twenty and thirty years of age, and that the majority of the cases were Canadian born, the rest being

*Presented at the annual meeting of the American Dermatological Association, Chicago, June 10, 1933, and published by kind permission of that Association.

mainly of Anglo-Saxon stock with a sprinkling of other nationalities and practically no negroes.

The infection was non-marital in most cases but in the married group the data showed 152 infections acquired from extra-marital sources.

The activity of the social workers is shown by the excellent results in finding and examining contacts. There were 218 contacts, of whom 208 were located and 180 examined. Of the 180 examined, 108 were negative and 72 positive.

Medical Survey

The 652 cases studied were divided into the following classes:

A—sero-negative primary syphilis	109
B—sero-positive primary syphilis	226
C—secondary syphilis, first year of infection	317
TOTAL	652

Our standard of cure, while not infallible, was followed as closely as possible and consists of the following:

1. A thorough course of treatment.
2. A year or more of observation during which time the patient must remain clinically and serologically negative.
3. Neurological examination and spinal fluid negative.

The treatment results for the whole group divided into the three classes are shown in Table I.

TABLE I.

RESULT BY STAGE OF DISEASE

Result	Stage of Disease			Total
	A	B	C	
Cured	28	34	54	116
Transferred	10	49	53	112
Still attending	12	31	50	93
Lost	44	94	129	267
D.P.H.	3	4	3	10
Dead	—	2	2	4
Asylum	—	—	2	2
Dead, not due to syphilis	1	1	2	4
Still attend for observ.	11	11	22	44
TOTAL	109	226	317	652

The cases recorded in the above table as lost could not be located either because they had moved or had given false names or addresses. The cases referred to the Department of Health are those located but who refused to return to the clinic for treatment. The four cases reported dead due to syphilis require some explanation. One died from hepatitis probably due to treatment, though it may have been the result of syphilis; one died from tuberculosis;

one was shot, and in the fourth case the cause of death was unknown. It has been estimated that in the 652 cases over 20,000 treatments were given, with only one death which may be traceable directly to treatment.

Thus we have 116 or 17.7 per cent cured, 93 or 14.2 per cent still attending for treatment, 44 or 6.7 per cent still attending for observation, having completed the prescribed course of treatment, and 42.4 lost; in other words, only 38.6 per cent stay with the clinic, the rest being lost or transferred.

The results of treatments for the three classes are shown in Table II.

TABLE II.

PER CENT DISTRIBUTION OF RESULT FOR DIFFERENT CLASSES

Result	Stage of Disease		
	A	B	C
Cured	25	15	13
Still attending for observation	10	4.9	7
Still attending for treatment	11	13.5	15.9

The table shows in class A a total of 35 per cent probably cured and 11 per cent still attending for treatment; in class B, 19.9 per cent probably cured and 13.5 per cent still attending for treatment; class C, a total of 20 per cent probably cured and 15.9 per cent still attending for treatment. In each class the remainder were either lost or transferred.

The probable reason for a higher percentage of class C cases still attending for treatment is due to their having had secondary manifestations of the disease and the realization of their greater need for treatment than in the class A cases.

These results may seem discouraging and one wonders if it warrants the effort and money expended. A somewhat brighter aspect is placed upon the situation, however, when one considers the results obtained in those who do attend regularly; that is, excluding the delinquents labelled lost and transferred. An analysis of the results from this standpoint is given in Table III.

TABLE III.

PER CENT DISTRIBUTION OF RESULTS IN CASES ATTENDING CLINIC SATISFACTORILY

Result	Class		
	A	B	C
Cured	54.8	50	42
Still attending for observation	21.3	14	17.1
Still attending for treatment	22.5	36	38.7

In class A, a total of 76 per cent probably cured; class B, 64 per cent; and class C, 59 per cent.

The average number of visits and the average amount of drug administered in the 116 cases reported cured have been calculated and are shown in Table IV.

TABLE IV.

AVERAGE NUMBER OF VISITS AND AVERAGE AMOUNT OF DRUG USED IN 116 CASES REPORTED CURED, ACCORDING TO CLASS

Class	Average Visits	Average Drug in gms.	
		Arsenical	Heavy Metal
A	36	6.2	1.8
B	49	11.6	1.7
C	62	11.6	1.7

It is noticed that classes B and C seem to require an equal amount of drugs, indicating, we are sure, that once the blood becomes positive the cases should be considered and treated much the same as secondary cases. The number of visits is higher in class C as they are required to report over a longer period.

Forty-eight cases in the cured group were discharged before the adoption of the rigid rules regarding a negative cerebrospinal fluid and neurological examination. The period of observation of these cases is shown in Table V.

TABLE V.

PERIOD OF OBSERVATION OF 48 CASES REPORTED CURED WITHOUT EXAMINATION OF SPINAL FLUID

Period of Observation in Years	Neg. Neurological No. of Cases	No Neur. Exam. No. of Cases
1½	4	17
2½	6	9
3½	6	—
4½	—	1
6½	2	1
7½	—	1
8	1	—
TOTAL	19	29

With few exceptions these cases have had long periods of observation without clinical or serological recurrence and in all probability are cured. Nineteen had a negative neurological examination and of these only 4 had as little as 1½ years' observation period, the other 15 having over 2½ and up to 8 years' observation. Twenty-nine had no neurological examination; of these, 17 had only 1½ years' observation period, the other 12 having from 2½ to 7½ years' observation.

ACKNOWLEDGMENTS

The authors desire to express their thanks and appreciation to the workers who co-operated so splendidly and made this analysis possible. They especially wish to thank Miss Phyllis Denne of the clinic's social service department, the Department of Epidemiology and Biometrics of the School of Hygiene, and the Provincial Department of Health, the members of which were always ready with kindly help and suggestions.

APPENDIX

METHOD USED IN RECORDING DATA FOR CASES OF EARLY SYPHILIS IN THE SPECIAL TREATMENT CLINIC OF THE TORONTO GENERAL HOSPITAL, 1919-1931

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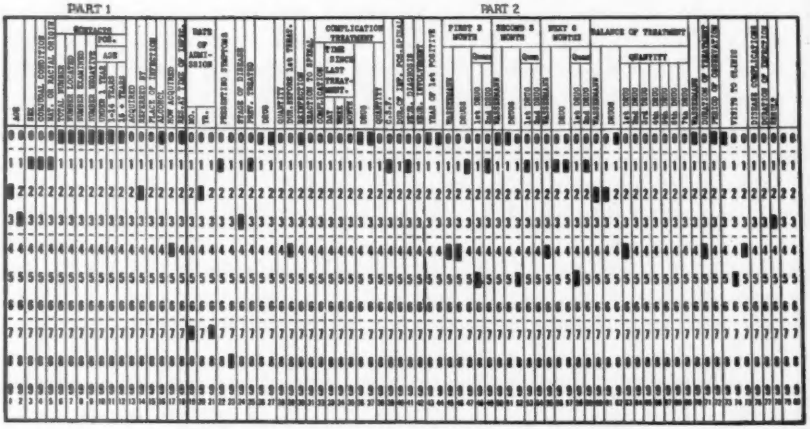
THE analysis of the results of treatment of the cases was accomplished by recording on specially designed punch cards all the data found in their outdoor and indoor medical history records. The information on the social aspects of the problems was also included in the record and was collected from the history sheets by the social service department of the special treatment clinic.

This important part of the study was undertaken personally by Miss Phyllis Denne, the director of the social service department. In attempting to



Punch card used to record symptoms, treatment and results.

record on punch cards the vast amount of detail recorded in the histories, particularly as relating to treatment, many difficulties were encountered in making suitable codes. The information relating to the medical history was coded by the physicians in charge of the clinic. The codes made possible the relating of many combinations of treatment, presenting symptoms and laboratory findings. When the data had been collected, they were transferred to the punch cards, the cards sorted with a Hollerith machine, and tabulations made.

The social aspects were presented under the following headings on Part 1 of the card: *age, sex, conjugal condition, nationality or racial origin*; as relating to *contacts, total number, number located, number examined, number negative,*

and *distribution of those positive by age groups,* namely, under one year, 1-14 years, and 15 years and over. Additional data from the social history were recorded under the following headings as relating to infection: *acquired, referred by, place of infection, alcohol, how acquired,* and *residence at time of infection.*

Part II of the card recorded the medical history. By the use of suitable codes it was possible, in 61 columns of the card, to record the many combinations of symptoms, drugs used in treatment, complications, etc. Columns 19, 20 and 21 recorded the *date of admission*; 22 and 23, *presenting symptoms*; and 24, *stage of the disease.* The record of *previous treatment* was recorded in column 25, with the *drug used* and *quantity* in columns 26, 27 and 28. *Duration before the first treatment* was stated in column 29, history of *reinfection* in number 30, and *reaction to spinal treatment* in 31. *Complications following treatment* were presented as follows, in seven columns: *time elapsing since the last treatment, drug used* and *quantity. Serological findings of the cerebrospinal fluid* were recorded in column 39, *duration of infection* as indicated by *positive spinal fluid* in 40, *neurological diagnosis* in 41, *neurological involvement* in 42, and the *year of first positive* in columns 43 and 44. The *results of treatment* were studied after the first three months' treatment, the second three months' period, and at the conclusion of the treatment. The headings utilized for this purpose occupy columns 45 to 70:

First Three Months
- Wassermann
- Drugs
  - Quantity, 1st drug
  - " 2nd drug

Second Three Months
- Wassermann
- Drugs
  - Quantity, 1st drug
  - " 2nd drug

Next Six Months
- Wassermann
- Drugs
  - Quantity, 1st drug
  - " 2nd drug

Balance of Treatment
- Wassermann
- Drugs
  - Quantity, 1st drug
  - 2nd drug
  - 3rd drug
  - 4th drug
  - 5th drug
  - 6th drug
  - 7th drug

In column 71 *duration of entire treatment* was recorded; in 72 the *period of observation*; *visits to the clinic in columns* 73, 74 and 75; *disease complications* in 76; *duration of infection* in 77; and *result* in 78. Columns 79 and 80 were left blank for possible use.

As mentioned, the use of the punch card with a suitable code made possible the relating of many combinations of treatment, etc. The codes used for the major headings are given in detail on pages 428 and 429.

CODES

PRESENTING SYMPTOMS
(Columns 22-23)

01. Genital Sore
02. Extra Genital Sore
03. Rash
04. Sore Throat
05. Balanitis
06. Urethritis
07. Routine Wassermann
08. Ulcers
09. Bone Changes
10. Interstitial Keratitis
11. Nervous Changes
12. Cranial Nerve Involvement
13. Cardio Vascular Involvement
14. Respiratory
15. Gastro-Intestinal
16. Haematopoietic System
17. Vaginal Discharge
18. Genital Sore and Rash
19. No symptoms but history O.K.
20. 4+ Ulcers on Scrotum
21. Rash, Sore Throat, Genital Sore
22. Genital Sore and Alopecia
23. Ulcers Rectum
24. Extra Genital Sore and Rash
25. Sore Throat and Rash
26. Headache, Rash and Sore Throat
27. Joint Symptoms
28. Rash & Condylomata
29. Genital Sore and Condylomata
30. Headache

STAGE OF DISEASE
(Column 24)

A. Sore Wassermann Negative
B. Sore Wassermann Positive
C. Secondary
D. Tertiary
E. Latent

PREVIOUSLY TREATED
(Column 25)

1. No
2. Little
3. Adequate
4. Adequate some years ago, then irregular

DURATION BEFORE 1ST TREATMENT
(Column 29)

0. Not known
1. Less than one week
2. 1-2 weeks
3. 2 weeks to 1 month
4. 1-3 months
5. 3-6 months
6. 6 months to 1 year
7. 1-2 years
8. 2-4 years
9. 5-9 years
11. 10 years or more

REINFECTION
(Column 30)

0. No
1. Yes

REACTION TO SPINAL
(Column 31)

0. None
1. Mild
2. Severe
3. Not done

CEREBROSPINAL FLUID
(Column 39)

1. Not done
2. Negative
3. Positive
4. Two or more spinal

DURATION OF INFECTION (Positive Spinal)
(Column 40)

1. Up to one year
2. 1-5 years
3. 5-20 years
4. 20+ years

YEAR OF 1ST POS. SPINAL
(Columns 43-44)

NEUROLOGICAL DIAGNOSIS
(Column 41)

0. Not done
1. Negative
2. C.S.S.
3. T.D.
4. G.P.I.
5. Suspicious

NEUROLOGICAL INVOLVEMENT
(Column 42)

1. Pupillary Involvement
2. Other Cranial Nerves
3. Reflex Changes (other than Cranial Nerves)
4. Motor Changes
5. Sensory Changes
6. Mental Changes
7. 1 + 6
8. 1 + 3 + 5
9. 2 + 3
10. 1 + 3
11. 1 + 2 + 3 + 6
12. 1 + 3 + 4 + 5

WASSERMANN TEST
(Columns 45, 50, 55, 60)

0. Negative
1. Weakly Positive
2. Positive
3. Strongly Positive
4. Very Strongly Positive
5. Not Done

DRUGS
(Columns 26, 27, 36, 37, 46, 47, 51, 52, 56, 57, 60, 61)

01. Mercury Sal. —H
02. Sod. Thiosulphate —S
03. Diarsenol —D
04. Novarsan —N
05. Mercurosol —M
06. Merc. Ointment—O
07. Bismuth —B
08. Medicine —Med.
09. Tryparsamide —T
10. S+M
11. D+M
12. N+M
13. S+B
14. D+B
15. N+B
16. S+H
17. D+H
18. N+H
19. M+Med
20. D+Med
21. N+Med
22. S+O
23. D+O
24. N+O
25. D+N+T+H+M +O+Med
26. D+H+O + Med
27. D+N+H
28. B+O

DRUGS (CONT'D)

29. D+N+O +M
30. H+Med
31. D+M+H
32. D+H+Med
33. H+Med
34. N+T
35. N+O+Med
36. N+M+B
37. D+N+M
38. D+B+H +Med
39. N+H+O
40. O+Med
41. N+M+Med
42. N+B+Med
43. D+M+Med
44. D+H+M +B
45. N+T+B +M+Med
46. D+H+M +Med

QUANTITY
(Columns 28, 38, 48, 49, 53, 54, 58, 59, and 63-69)

1. 0-1 Grams
2. 1-2 "
3. 2-3 "
4. 3-4 "
5. 4-5 "
6. 5-9 "
7. 10-19 "
8. 20-29 "
9. 30-39 "
10. 40-49 "
11. 50-99 "
12. 100+ "

TREATMENT COMPLICATIONS
(Column 32)

1. Arsenical Dermatitis
2. Jaundice
3. Nervous Complications
4. Blood Complications
5. Kidney Complications
6. Gastro-Intestinal
7. Nitritoid Crises
8. Herxheimer Reaction
9. Stomatitis
10. Hepatitis without Jaundice

DISEASE COMPLICATIONS
(Column 76)

1. Iritis
2. Optic Atrophy
3. Meningitis
4. Choroiditis
5. Deafness
6. Hemiplegia
7. Hepatitis
8. Recurring Symptoms

RESULTS
(Column 78)

1. Cured
2. Transferred
3. Still attending for treatment
4. Lost
5. D.P.H.
6. Dead—due to Syph.
7. Asylum
8. Dead—not due to Syphilis
9. Still attending for observation

DURATION OF TREATMENT, OBSERVATION AND INFECTION
(Columns 71, 72 and 77)

0. No period of observ.
1. Under 3 months
2. 3-6 months
3. 6-12 months
4. 1-2 years
5. 2-3 years
6. 3-4 years
7. 4-5 years
8. 5-6 years
9. 6-7 years
11. 7-8 years
12. 8 + years

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES

JULY, 1934

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria.....	0	2	1	72	15	20	13	0	3
Scarlet Fever....	0	36	7	191	197	90	53	15	121
Measles.....	0	2	6	693	176	321	69	1	7
Whooping Cough.....	0	30	2	564	520	11	120	12	46
German Measles..	0	11	0	63	7	0	1	2	3
Mumps.....	0	1	1	33	141	2	9	0	68
Smallpox.....	0	0	0	0	0	0	0	0	0
Cerebrospinal Meningitis.....	0	0	0	1	2	1	1	0	1
Anterior Poliomyelitis...	1	0	0	8	5	0	1	0	1
Typhoid Fever...	1	1	3	70	27	4	17	7	16
Trachoma.....	0	0	0	0	1	0	4	0	57

*Data furnished by the Dominion Bureau of Statistics, Ottawa.

Carbon Monoxide Poisoning

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CARBON monoxide accounts for more human deaths annually than all other gaseous poisons combined. Its occurrence is almost universal, resulting as it does from incomplete combustion. Industrially carbon monoxide occurs in high concentration in smelters, being a major hazard in steel plants. It is to be guarded against in mines after an explosion or blasting operations. In the home it is the responsible factor in coal gas poisonings due to faulty heating appliances. The automobile produces the gas in large quantities and it is present in varying quantities in public garages. A car with the motor idling in a closed single garage produces sufficient of the gas to render the air dangerous in from five to ten minutes. It is one of the most insidious poisons known as it is odourless (except in the nearly pure form when it possesses a faint garlic odour) and produces no irritating symptoms. For these reasons a knowledge of its mode of action and methods of determining its presence are of paramount importance.

PHYSIOLOGICAL ACTION

The important researches of Haldane (1, 2, 3, 4) in this field placed our knowledge of the action of carbon monoxide on a firm basis. In the latter part of the 19th century Haldane was engaged in the examination of mine gases. In the course of this work he became interested in the action of carbon monoxide. Following a number of preliminary experiments on mice, Haldane became firmly convinced that the only action possessed by CO was its power to combine with the haemoglobin of the blood producing anoxemia. This view was greatly strengthened by the fact that he was able to maintain a cockroach (a form of life devoid of haemoglobin) in an atmosphere of 79 per cent CO and 21 per cent oxygen for a period of 18 days, with the production of no apparent ill effects.

Haldane's original assumption that CO has no other effect than that produced by depriving the blood of its capacity to carry oxygen has been amply verified by the work of Haggard (5) on the growth of neuroblasts of chickens in atmospheres of 79 per cent CO and 21 per cent oxygen. Here again, as in the case of the cockroach, the oxygen exchange is effected without haemoglobin as an intermediary. Haggard's results are shown in Table I. Nerve cells were used in the experiments because it had long been felt that carbon monoxide possessed a specific toxic action on the higher nerve centres. From his experiments, however, Haggard was led to conclude in agreement with Haldane that the paralysis and mental aberrations noticed in many cases of recovery from prolonged CO asphyxia must be attributed only to injury produced by anoxemia. Illuminating gas possesses probably other

toxic properties in addition to those due to the presence of carbon monoxide. Haggard did not, however, consider this as invalidating the belief that asphyxia from illuminating gas was largely due to the carbon monoxide present.

TABLE I

REACTION OF CHICK NERVOUS TISSUE TO VARIOUS ATMOSPHERES

Atmosphere to which nervous tissue was exposed	Number of cultures	Number growing	Per cent growing	Remarks
Atmospheric air	36	31	86.1	Growth normal in appearance.
79% CO and 21% O_2	20	18	90.1	Growth normal in appearance.
Atmospheric air and 0.1% illuminating gas	18	0	0	Tissue dead and partially degenerated.

According to Henderson and Haggard's (5) classification, CO is a chemical asphyxiant. The only other gases belonging to this group are the cyanides. The action of chemical asphyxiants is such that they produce anoxemia, even when present in extremely minute amounts, differing from the simple asphyxiants such as hydrogen and nitrogen which act by excluding oxygen from the lungs.

The chemical action of CO and the cyanides is, however, entirely different. While the cyanides act in some way upon the tissues, preventing their utilization of oxygen, carbon monoxide combines with the haemoglobin of the blood displacing the oxygen. This is represented by the reversible equation:

(1) $HbO_2 + CO \rightleftharpoons HbCO + O_2$

oxyhaemoglobin carboxyhaemoglobin

and quantitatively:

(2) $$\frac{HbCO}{HbO_2} = \frac{pCO \times aCO}{pO_2 \times aO_2}$$

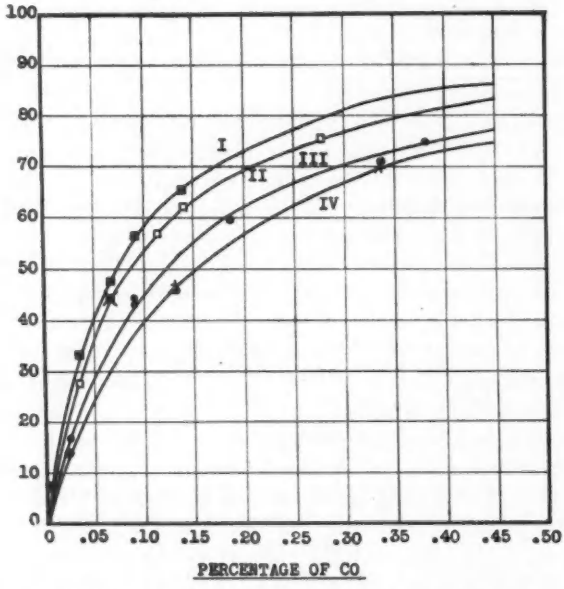
pCO = partial pressure of CO,
pO_2 = partial pressure of O_2,
aCO = affinity of CO for haemoglobin,
aO_2 = affinity of O_2 for haemoglobin.

The carboxyhaemoglobin dissociation curve for blood in the presence of atmospheric air shows the percentages of carboxyhaemoglobin formed at various partial pressures of carbon monoxide. To obtain the dissociation curve, freshly diluted blood is shaken with various mixtures of CO and air, and the percentage of carboxyhaemoglobin in the blood is determined. Fig. I shows the dissociation curves for various samples of blood as found by Haldane (7) and his co-workers. The blood was equilibrated with various concentrations of CO in the presence of atmospheric air (partial pressure of oxygen 20.9 per cent). The curve shows that when 50 per cent of the haemoglobin is held by oxygen and 50 per cent by CO the percentages of oxygen and CO are in the ratio of 20.9 : 0.7 or 299 : 1; *i.e.*, CO has roughly three hundred times the affinity for haemoglobin as that possessed by oxygen. It is further apparent from the curve that this affinity is by no means constant either for individuals of the same species or for different species. This experiment supplies the solution to equation 2 which now becomes:

$$\frac{HbCO}{HbO_2} = \frac{pCO \times 300}{pO_2 \times 1} \quad (3)$$

Thus if a sample of air containing an unknown percentage of CO is shaken with fresh diluted blood, and the percentage saturation of blood with carboxyhaemoglobin determined, equation 3 may be solved for pCO (since HbCO is determined and HbO_2 equals 100 minus HbCO, and pO_2 equals 20.9 in the case of atmospheric air).

FIGURE I.—Dissociation curves of CO haemoglobin in presence of air (20.9% O_2) at a temperature of 38°C.



I, Blood of J.S.H., II, Blood of C.G.D., III, Blood of Mouse A., IV, Blood of Mouse B.

Toxic Concentration

Haldane conducted experiments in which he inspired known concentrations of CO, noting the symptoms and determining at the same time the percentage saturation of his blood with carboxyhaemoglobin. In this way he obtained accurate quantitative information as to the amounts of CO that could be breathed with safety.

Since the effects of CO are due to the percentage of carboxyhaemoglobin in the blood, the time of exposure and the volume of breathing must be taken into consideration in fixing the limits of the atmosphere that is safe. Table II shows the percentage saturation of the haemoglobin with CO and the corresponding physiological effects.

These findings of Henderson (8) (Table II) in 1921 correspond very closely with those of Haldane recorded 25 years previously. Henderson was particularly interested in the time necessary to reach these concentrations in the

blood, during comparatively short exposures. He found that upon exposure to concentrations of CO up to 6 parts per 10,000, the saturation was only about ½ equilibrium value, after one hour's exposure, in individuals in a resting state.

TABLE II

PERCENTAGE SATURATION OF THE BLOOD WITH CARBON MONOXIDE AND CORRESPONDING PHYSIOLOGICAL EFFECTS

Per cent of haemoglobin in combination with carbon monoxide	Physiological effects
10	No appreciable effect except shortness of breath on vigorous muscular exertion.
20	No appreciable effect in most cases except short wind even in moderate exertion, slight headache in some cases.
30	Decided headache, irritable, easily fatigued, judgment disturbed.
40-50	Headache, confusion, collapse and fainting on exertion.
60-70	Unconsciousness, respiratory failure and death if exposure is long continued.
80	Rapidly fatal.
over 80	Immediately fatal.

The reason for the time element in calculating a dangerous atmosphere will be made more evident by a consideration of the following factors:

When a dilute blood solution is shaken in the presence of carbon monoxide, equilibrium is attained quite rapidly. However, in the case of an animal or man breathing an atmosphere containing carbon monoxide, the process of saturating the blood is governed by a number of factors.

Knowing that the average man at rest has a pulmonary ventilation of approximately 5 litres per minute (volume of respiration 7.5 litres and assuming a dead space of 33⅓ per cent) the following calculation may be made. Five litres of air containing 0.07 per cent CO, the percentage which at equilibrium would produce 50 per cent saturation of the blood, contains $5 \times 0.07 \times 1000 = 3.5$ cc. of CO, so that in one hour 3.5×60 or 210 cc. of the gas would come in contact with the blood. The blood volume of an adult is roughly 5 litres and has the capacity to carry roughly 1 litre of oxygen. Each cc. of CO absorbed decreases the oxygen capacity by 1 cc.; 210 cc. would therefore decrease the oxygen capacity by 21 per cent, which would produce only very slight symptoms of anoxemia (see Table II). As the absorption approaches equilibrium, the saturation becomes less and less complete, so with low concentrations almost an indefinite time would be required to arrive at the equilibrium value. It is evident that increase in the pulmonary ventilation by any means will hasten this process. It is also due to these factors that mice and other small animals are of value in determining a dangerous concentration of CO.

METHODS OF DETERMINING CARBON MONOXIDE

The methods which are available for the estimation of carbon monoxide

in air and in blood may be classified under the following headings: (1) Colorimetric, (2) Chemical, (3) Spectroscopic, (4) Electrical, (5) Gasometric.

(1) *Colorimetric Method*

The method of Sayers and Yant (9) is more frequently employed than the earlier method of Haldane (1). In principle it is as follows:

When tannic acid is added to a dilute solution of normal blood and allowed to stand for 24 hours a grey suspension is formed. Blood containing 100 per cent carboxyhaemoglobin, on the other hand, remains carmine red when similarly treated. Pyrogallic acid appears to hasten the reaction, the colour developing in 30 minutes or less. Colour standards are prepared by mixing varying proportions of blood containing 100 per cent oxyhaemoglobin with blood containing 100 per cent carboxyhaemoglobin. A series of tubes is thus obtained containing percentages of carboxyhaemoglobin ranging from 10 per cent to 100 per cent. To each of these tubes a mixture consisting of 50 per cent pyrogallic and 50 per cent tannic acid is added, and the colour allowed to develop. The blood standards, so prepared, are, however, not permanent and a set of colour standards has been prepared using artists' colours.

To determine the percentage of carboxyhaemoglobin in the blood of a subject, an aqueous dilution of his blood is prepared (one part of fresh blood diluted to twenty parts with distilled water). To 2 cc. of the diluted blood approximately $\frac{1}{4}$ gram of the pyrogallic tannic acid mixture is added. The colour is allowed to develop and comparison is made with the standards. It is evident, of course, that the method may be used for the estimation of CO in air, as has been already explained. The method is sensitive to about one part of CO per ten thousand parts of air, the percentage error of the determination varying from about fifty per cent at this concentration of CO to approximately fifteen per cent when the concentration of CO is around twenty parts per ten thousand.

There are a number of other qualitative colour reactions, principally those involving the reduction of palladium dichloride, or the reduction of "Hoolamite", a mixture of pumice, fuming sulphuric acid and iodine pentoxide (10). These methods, however, have no quantitative value and, moreover, are not specific for CO, as hydrogen and other reducing agents bring about the change. For other methods see Dennis (11) and McNally (12).

(2) *Chemical Methods*

Only one method of this type need be considered, the iodine pentoxide reaction, which was first used by De la Harpe and Riverdine in 1888 for the detection of CO. Nicloux (13) in 1898 first used this reaction for quantitative purposes.

The equation:

$$I_2O_5+5CO\rightarrow 21+5CO_2.$$

The liberated iodine is titrated with sodium thiosulphate or the carbon dioxide may be determined gasometrically. The former method seems to be preferred.

$$Na_2S_2O_3+I_2=Na_2S_4O_5+2NaI.$$

Unfortunately the method is not specific for CO as unsaturated hydrocarbons, hydrogen sulphide and sulphur dioxide also liberate iodine from the reagent. Complicated absorbing trains are therefore necessary. Sulphuric acid, and activated charcoal are used to free the gas from these interfering substances. Teague (14) recommends the use of liquid air. Further complications are introduced by the fact that iodine pentoxide attacks cork and rubber and all the usual lubricants. Sealed joints must be therefore used; further, the iodine pentoxide must be prepared fresh for each determination. The reaction proceeds best at about 150° C., the tube containing the iodine pentoxide being suspended in an oil bath. Below this temperature the reaction does not go to completion.

In spite of the objections raised the method is very accurate and is sensitive to 1 part of CO in 40,000 of air.

(3) *Spectroscopic Methods*

The fact that carboxyhaemoglobin possesses a characteristic absorption spectrum makes the spectroscopic method the most specific of all means for the determination of CO and it is exceeded in delicacy only by the electrical method, which will be described later.

Nicloux (15, 16, 17) and Florentine and Vandenberghe (18) consider this the most satisfactory means of analysis for CO. Details of the method are to be found in the above mentioned authors' papers. Personal experiments show that it yields satisfactory results, is easy to use, and comparatively rapid.

The other spectroscopic method, that of Hartridge (19), originally developed by Hufner, involves the measurement of the shift of the absorption bands of haemoglobin produced by the presence of carboxyhaemoglobin. The method is accurate but requires complicated apparatus and is difficult to calibrate.

(4) *Electrical Method*

Carbon monoxide and oxygen combine according to the following equation:

$$2CO+O_2 \rightarrow CO_2+69.960 \text{ gm. calories.}$$

This heat increases the temperature of the gases and anything in contact with them. In 1917 Frazer and Scalin of the U.S. Bureau of Mines patented a catalyst for promoting this reaction at low temperatures. The catalyst which is called "hopcalite" consists of a specially prepared mixture of manganese oxide and copper oxide. It was originally used in gas mask canisters.

In connection with the construction of the Holland tunnel in New York, the U.S. Bureau of Mines (20) undertook the development of a recording CO indicator making use of the above principle. Essentially their apparatus consisted of a vessel containing differential thermocouples in series; one set of junctions was covered with hopcalite, the other set with granular pumice stone. The leads from the thermocouple were connected to a recording potentiometer. The air containing CO was drawn by means of a pump, through absorbers to remove any water vapour and sulphur dioxide that might be present. (Soda lime and activated charcoal served this purpose.)

Passage through a coil suspended in a steam bath heated the gases to 100°, which fulfilled two purposes, that of ensuring a fairly constant temperature and accelerating the reaction between the oxygen and carbon monoxide when the gases came in contact with the hopcalite. On passage through the vessel containing the catalyst no reaction occurred between the gases until they reached the junctions which were surrounded by the hopcalite. Here the carbon monoxide and oxygen combined with the evolution of heat, which warmed one set of thermo-junctions. As a result a potential difference was set up which was indicated on the potentiometer.

This method is ideal for the determination of CO. It is rapid, the maximum reading being obtained in about four minutes; is very sensitive, one part per million of CO being detected with ease; and it is specific, hydrogen alone affecting the determination, and that to only a limited extent. The only precaution necessary in using the apparatus is to ensure the removal of water vapour, as this poisons the catalyst. It is equally valuable for the determination of either low or high concentrations of the gas.

(5) *Gasometric Methods*

It is not possible to determine quantities of the gas in concentrations below 1 part in 10,000 by these methods.

Haldane (21) adapted his well-known gas analysis apparatus to this purpose. The carbon monoxide was determined by him, either by combustion, using a platinum spiral and subsequent absorption of the carbon dioxide formed, or by direct absorption of the carbon monoxide in ammoniacal cuprous chloride solution. According to Haldane both methods have an accuracy of 0.005 per cent.

The portable Orsat apparatus, which is described in any text on gas analysis, is adaptable in the same way for the determination of carbon monoxide.

Van Slyke (22) adapted his blood gas apparatus to determine the carbon monoxide in blood. The procedure was to absorb the carbon dioxide as usual, then the oxygen with alkaline pyrogallol, and determine the residual CO by noting its volume. He states that the error of the method is about 2 per cent when there is 50 per cent oxyhaemoglobin, 50 per cent carboxyhaemoglobin present, and about 6 per cent at concentrations of 17 per cent carboxyhaemoglobin.

Discussion of Methods of determining Carbon Monoxide

The thermoelectric method is the most satisfactory from every standpoint except cost. Next to this the spectroscopic determination appears to be the best. The colorimetric methods have the advantage that they are cheap and easy to use, but especially when using them for air determinations it is a matter of some uncertainty whether the blood sample being used has been equilibrated with the air. The accuracy of the colorimetric methods is sufficient for practical purposes. The iodine pentoxide method is very accurate but is certainly not to be considered when many determinations are to be

run as it is slow and tedious. (With reference to this, however, Teague states that with the portable apparatus developed by him, a determination may be made in 15 minutes.)

The gasometric methods have only limited applicability for the measurement of low concentrations of the gas; for higher concentrations, however, such as are met in mine explosions, they are ideal.

TREATMENT OF CARBON MONOXIDE ASPHYXIA

The same factors governing the absorption of CO govern recovery from its effects, namely, the mass action of the gases in the alveoli. The carboxyhaemoglobin is, however, much more stable than oxyhaemoglobin and the process of removal of CO is comparatively slow, usually requiring several hours.

The victim of carbon monoxide asphyxia should be removed at once from the poisonous atmosphere, and if respiration has ceased artificial respiration should be applied until normal breathing is restored. The only really effective therapeutic measure consists in the inhalation of 5 per cent CO_2, 95 per cent O_2 mixture, the carbon dioxide being added as a respiratory stimulant. Sayers and Yant (23) in 1923, following Henderson's recommendation of the treatment in 1920, carried out a series of tests to determine the relative efficacy of this treatment. Three series of experiments were performed. In one the subject, after gassing with CO, was allowed to breathe fresh air; in another, oxygen; and in a third, 90 per cent oxygen and 8 to 10 per cent CO_2. The per cent saturation of the blood with CO was determined throughout the tests. Figure II summarizes their findings, which are similar to those obtained by Henderson the previous year; he, however, did not obtain as complete quantitative information.

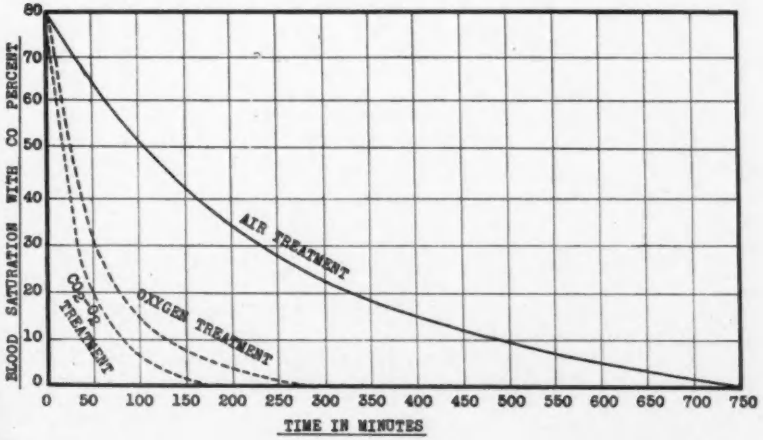


FIGURE II.—Average Curves Showing Comparative Elimination of Carbon Monoxide from Blood by the Three Different Treatments.

Recovery from CO poisoning is usually complete if the gassing has not been too prolonged. It is important to note that long exposures to low concentrations, resulting in a similar degree of saturation of the blood as produced by a short exposure to high concentrations, is much more likely to cause injury to the tissues, since the effect of oxygen deprivation is additive. For this reason it is of paramount importance to effect the removal of CO from the blood as rapidly as possible, many of the permanent injuries resulting from CO asphyxia being due to the prolonged anoxemia of the recovery period. There are many records of cases of recovery from prolonged CO asphyxia in which degenerative changes in the higher nerve centres have occurred, resulting in mental symptoms and in some cases paralysis.

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CANADIAN PUBLIC HEALTH ASSOCIATION

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LABORATORY SECTION

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Two Years' Experience with the Proposed Form for the Registration of Stillbirths*

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IN 1930 Dr. Eugene Gagnon presented before the Vital Statistics Section a very comprehensive paper entitled "What is a Stillbirth?", reviewing the general principles and definitions bearing on live births, abortions, etc., the medical side of the question and the jurisprudence established in the province of Quebec, and the various definitions relating to stillbirths in the United States and other countries. In concluding his paper, he urged the appointment of a special committee to define, for statistical purposes, a live birth and a stillbirth and to discuss the adopting of a special form for the declaration of stillbirths. A committee was appointed by the Section under the chairmanship of Dr. Gagnon, which reported at the annual meeting of the Association in Toronto in 1931. It recommended that, for statistical purposes, a stillbirth be defined as "the birth of a foetus after 28 weeks or 6½ months of pregnancy measuring at least 35 cm., in which pulmonary respiration does not occur; such foetus may die either before, during, or after birth and complete extrusion of the head, trunk and limbs from the body of the mother, but before it has breathed."

The Section adopted this definition, which is now accepted by the Dominion Bureau of Statistics and by the various provinces, but took no action regarding the adoption of a special form for reporting. The committee was asked to continue and to report on the subject of a suitable form and to consider extending its use to include the infants dying within 24 hours of birth. No meetings, of the committee have been held, however.

In 1927 a special form for the reporting of embryos and foetuses was introduced by the province of Quebec. When, therefore, it was decided to determine the value of a special form for the reporting of stillbirths, it was necessary only to replace the report relating to embryos and foetuses with the new form. This change was made with the year 1932. It is possible, therefore, to report on two years' experience with the stillbirth form as used in Quebec. This form applies also to deaths of infants under one day of age.

The Advantages of a Stillbirth Form

As stated previously in this Section, the principle object of the suggested form is to obtain from the physician "a true and complete narrative of the facts having existed at the confinement (miscarriage, premature or full-term birth) instead of the physician's own interpretation of the facts." In other words, it

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is desired to obtain an adequate and complete statement which will permit of proper classification by the statistician according to permanent rules, permitting, therefore, of uniformity in classifying.

The form provides all of the essential information. It furnishes the statistician with age of the utero-gestation, which is of absolute importance if we are to determine clearly whether or not the product of confinement has been expulsed before or after the demarcation line of 6½ months' gestation. Information of the presence or absence of spontaneous breathing is also supplied, which is essential in classifying as either stillborn or live born, all cases in which expulsion of the foetus has occurred after 6½ months. Everyone admits that when a considerable amount of individual interpretation enters into a tabulation, the results cannot have any accuracy. If the interpretation, therefore, of "when" and "why" the product of gestation is a stillbirth or a live birth is left to physicians throughout the country, the final data cannot be regarded as true. Some physicians may report the product of confinement as live or stillborn no matter whether the child has breathed or not, and without giving consideration to the age of utero-gestation, being influenced by religious, scientific or even psychic feelings. As a result, the statistician must compile as a stillbirth what is truly a live birth, or vice versa. Further, without the essential information as to age, it is possible that births close to the demarcation line of 6½ months' gestation are computed either as still or live births. With the special form providing for the recording of these important data, the statistician avoids errors and the compilation is much more accurate.

Statistical Return for an Embryo, a Stillbirth, or a Child Having Lived Less than 24 Hours

Formerly a collector (or local registrar), in reporting stillbirths, returned two report forms—a birth and a death certificate, as in the other povinces of Canada. It will be noted that this form is to be filled for each embryo foetus, stillbirth, or live child having lived less than 24 hours. As pointed out, additional information not supplied on either of these forms is requested, which is essential in the proper classifying. Thus the interpretation of all cases is left to the statistician and from the information he is able to make a proper classification. The use of this form for the reporting of deaths under 24 hours avoids all possible errors arising from the physicians' interpretation, influenced as this may be by various considerations. Further, some physicians consider only the presence of spontaneous breathing as evidence that the foetus has lived, while others rely on pulsation of the severed cord.

Advantages of the Form

During 1932, 5,289 forms were received, relating to 1932 embryos and foetuses, 2,370 stillbirths and 987 live births in which death occurred within the first 24 hours. In table I embryos and foetuses are classified according to the age of gestation and in table II similar data relative to stillbirths and live births (under one day) are supplied.

PROVINCIAL BUREAU OF HEALTH

STATISTICAL RETURN FOR AN EMBRYO, A STILL-BORN OR A CHILD HAVING LIVED LESS THAN 24 HOURS

1. Place of birth or miscarriage — County (municipal) ..... Civil Municipality of ..... (State whether city, town or rural municipality)
Street name ..... House No. or Hospital name .....

2. Sex | 3. Single, twin, or triplet | 4. Are the parents married?

FATHER

5. Name

6. Age | 7. Racial origin

8. Occupation

9. Residence

MOTHER

10. Full maiden name

11. Age | 12. Racial origin

13. Children born to this mother — A. Children born after 6 months ½ of gestation: a. Born alive; b. Still living; c. Still born
B. Children born before 6 months ½ of gestation

14. Place of burial

N.B. *The delimitation of "Viability" has been established at 6 months ½, or 28 weeks, or 196 days for statistical purposes.*

MEDICAL CERTIFICATE

15. Date of birth or miscarriage ..... (month) ..... (day) ..... 193 (year)

16. Was this a full term birth? .....
If a premature birth, specify:
a. The age of gestation .....
b. The cause of miscarriage .....

17. The death of a child being born may occur BEFORE, DURING or AFTER the expulsion. Specify the cause of the death according to the case

	Cause of death
BEFORE the labor	
DURING the labor	
AFTER the labor	

18. After the complete expulsion of the foetus, did you observe:
a. Any pulsation of heart or cord? .....
b. Any spontaneous respiration? .....
c. If the child has breathed, for how long? .....

19. Name ..... M. D.
Address .....
Date 193

N.B. *The expulsion must be considered complete when the full body of the foetus has been separated from the body of the mother and the cord ligatured. — It is very important to specify if there has been any spontaneous breathing.—The length of the utero-gestation shall be mentioned as exactly as possible.*

20. PLACE OF registration of this burial
(a) Name of parish, church ..... (b) Civil municipality of .....
(c) Date ..... Month ..... Day ..... 19 ..... Year (d) County (municipal) .....

21. Name of clergyman in charge of Register of civil status in which the registration of this burial was made .....

(VOIR L'AUTRE CÔTÉ POUR LE FRANÇAIS)

TABLE I

AGE OF GESTATION OF EMBRYOS AND FOETUSES

Age of Gestation	*Number*
Under 3 months	168
3-4 months	352
4-5 months	432
5-6 months	532
6-6½ months	448
TOTAL	1932

TABLE II

STILLBIRTHS AND LIVE BIRTHS (DEATHS UNDER ONE DAY) ARRANGED ACCORDING TO AGE OF GESTATION

Age of Gestation	*Stillbirths*	*Live Births* (Deaths under 1 Day)
6½-7 months	156	104
7-8 months	550	263
8-9 months	461	94
9 months and over	1,203	526
TOTAL	2,370	987

The use of the special form replacing the birth and death registration forms has resulted in a great saving of time, trouble, and money. In Quebec statistics are collected by all members of the clergy and they have expressed appreciation of being required to fill out only this form in the place of two forms. As payment is made to the collectors for each report, the use of the single form results in a very considerable saving. Thus in 1932, 4,740 dual forms for stillbirths and 1,974 for deaths under one day, a total of 6,714, would have been received and paid for instead of 3,357 single forms. With payment at 15 cents each, the saving would have amounted to $504.55, approximately 50 per cent of the former expenditure. Another important advantage of the new form lies in the fact that it is not necessary to search the birth certificates for those of stillbirths and of children dying within the first 24 hours to ascertain if the birth report as well as the death certificate had been received.

From our experience, the new form appears to be entirely satisfactory for use in Quebec. As the committee of the Section has recommended the employment of a form, as trial has now been made in Quebec, and numerous appreciative comments have been made on the present form, the matter is before the Dominion Bureau of Statistics for consideration. It is recognized that the form needs additions or corrections for use in all the provinces and some of these have been indicated by the Bureau. To achieve a standard Canadian form, the study and co-operation of the provincial registrars and provincial medical health officers with the Dominion Bureau of Statistics and the Section of the Association is necessary.

SUMMARY

The statistical return as used in the province of Quebec for an embryo, a stillborn, or a child having lived less than 24 hours has been in use two years and has been found entirely satisfactory.

It possesses the following advantages: it effects a 50 per cent saving in the number of forms required, in the time and trouble in completing these, and in registration costs; it reduces the work of the local registrars; it affords a perfect balance of the statistical records of stillbirths and deaths under one day; it permits a true compilation, as the classification is made by the statistician, using uniform rules; and it is not subject to the possible errors of personal interpretation by reporting physicians.

The Educational Objective of Public Health Nursing*

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EDUCATION in its truest sense is a social process. The individual reacts and develops in relation to those environmental and social forces which make for character and personality. In turn, the individual becomes an influencing factor in his community, capable of contributing to the social group of which he is a member. If through this socializing process potentialities are developed into qualities of leadership, the individual then becomes a dynamic force, possessing marked qualities of self control and an ability to guide the thoughts and actions of others. Herein is expressed the social or democratic idea of education. Professor Dewey defines it as a process "by which the individual develops toward the highest service possible for him." This theory, then, provides what would seem to be the fundamental principle underlying the discussion of the topic in hand, viz., the educational objective of public health nursing.

The Place of Health Education

Making a direct approach to the problem, we are faced with the question, How shall we educate or prepare the public health nurse, that she may in turn educate the public, and in general meet the health needs of the community? Before this process can be determined, however, it is necessary to decide to what end she should be educated. Modern educational theory holds to the principle that the objectives of any professional preparation should be determined through an analysis of the changing needs of the community; that is, the community needs should determine the function of professional service, and to that end the individual should be prepared.

From the point of view of public health nursing, what, then, are the health needs of the modern community? We are immediately impressed with the serious fact that the complexity and uncertainty of life at the present time has created new problems which are undermining and affecting the general status of living, but underlying these acute situations there are those more fundamental human problems. Infants are born and mothers are to be saved; children are to be nurtured and their lives directed; communicable disease is to be prevented; happy family relationships are to be maintained. The public health nurse should therefore be prepared not only to meet these situations, which, because of the nature of life itself, are recurrent, but, to a greater extent than at any other stage in our nursing history, the modern public health nurse should be able to recognize, interpret, and adjust to new situations which are characteristic of a rapidly changing social order.

**Presented before the Public Health Nursing Section at the Twenty-Third Annual Meeting of the Canadian Public Health Association, Montreal, June, 1934.*

As the programme of preventive medicine and health education becomes more clearly defined, in relation to the whole public health movement, the place of the public health nurse in a community health programme offers increasing opportunities for professional service. One might suggest at this point that health education demands all the resources of a skilful and understanding personality. It is not merely a matter of established intelligent practice in relation to personal cleanliness, diet, sleep, etc.; these are of fundamental importance, but very definitely it is an endeavour to establish in the minds of children and adults a sane outlook towards life, to assist them in choosing those things which are most satisfying, most worth while, and which predispose to success and happiness.

Personality and Training of Nurses Essential

With this brief analysis of the field of educational opportunity, let us consider, for a moment, the type of person and qualifications necessary to fulfil the demands. The public health nurse should certainly be a person with specific personal and professional qualifications. First and foremost she should possess a personality which will inspire and which will invite confidence and hold it. She should have the scientific point of view and understanding in relation to personal health problems, and certainly she should have an appreciation of those physical and mental factors which condition personal health and happiness. With these qualifications assured, her efficiency will be determined in large measure by two very important criteria: (1) to what extent the public health nurse is able to apply her knowledge to interpret the personal and community health situations in her field of service, and (2) to what extent she uses her resources for establishing an effective public health programme.

Facing the Facts

Now follows the question: Does she measure up to her responsibilities for service and, if not, why not? We answer with hesitation and reservation, because we are mindful of the spirit and courage which has prompted many a nurse to give her whole self unsparingly to service. The Red Cross outpost nurse or the district nurse in an outlying area is an example of a community challenge which has been accepted willingly. Records of achievement on the remote frontier or in the city slum suggest a quality of service not to be forgotten. But let us view the situation more generally and impersonally, and discuss it in the light of modern education, as applied to present day health problems.

A survey of the general situation reveals the fact that the public health nurse has been slow to assume responsibility in the field of health education, and we are quite conscious of the fact that other health workers are coming into the field and fulfilling many important functions. We must face the fact that the major health problems of the community are going to be solved in the future, most economically and effectively, by one means, namely, education, and we must also recognize the fact that health authorities and health organi-

zations are now thinking in terms of the worker who will best fulfil the function, and a superior type of health worker will be increasingly demanded. This situation is an acknowledgment that there is something wrong and that some adjustment seems necessary if nurses are to take their natural and rightful place in the growing organization which to-day ministers to the health and general welfare of the community.

Some Weaknesses in Professional Training

The apparent lack of initiative on the part of the nurse to assume this greater and more difficult responsibility is traced to specific weaknesses in her professional preparation. True, graduate courses have been established to prepare the nurse for the public health field, but this specialized preparation cannot have its best results when the underlying preparation in the hospital nursing school has failed to provide the fundamentals.

We are coming to believe that health nursing is just as important as sick nursing, and if we are going to keep nursing intact, preventive and health aspects must become an integral part of the preparation of all nurses. The preparation of the public health nurse therefore should definitely begin in the undergraduate course, and at the very beginning she should be given the social and community points of view.

Under the present system of nursing education, in which students are carrying the load of hospital nursing service, it is evident that the necessary educational experiences to build the right foundation for public health nursing cannot be fully provided. An adjustment is necessary—it is not coming about by any revolutionary measure, but through a slower and surer process. The public must be educated to see that if it needs and expects efficient public health nursing service in the community, then in equal measure should it be responsible for the preparation of the worker. The public assumes responsibility for the education of teachers; why then should it not assume the same responsibility for the education of nurses? The Director of the Survey of Nursing Education in Canada states:

> "It is a truism to say that the state must have teachers. It is equally true that the state also must have nurses. The two professions serve the community in fields that are parallel and compensatory . . . . Why then should not nursing education be made an integral part of the general educational system of the province, as is that of the teaching profession?"

While schools of nursing continue to be controlled by hospitals, for the purpose of providing hospital nursing service on the most economic basis, the educational needs of the student will continue to be sacrificed for the more acute and urgent needs of the hospital. This situation is at the root of our nursing education problem and it is a situation which cannot be easily solved. Hospital administrators are not going to take the initiative and abandon a student service which has proved most economical and satisfactory. The nursing profession, therefore, must plead its own case, and prove its own

worth; and it is going to take the combined interest, effort, and brains of the nursing body to raise the status of nursing education to a level equal to that of other recognized professional institutions. For some time yet, we know not how long, nursing schools will continue to be under the control of hospital administration, but some adjustments are possible and should be made in the immediate future whereby student experience will be made more educational.

From the point of view of the preparation of the public health nurse, what should an approved school of nursing provide? In the first place, it should be understood that the undergraduate course plans to prepare the nurse for general practice and not for any particular specialty. It should give, therefore, a broad, all-round preparation which will provide a sound foundation for any branch of professional nursing service. It, therefore, does not plan to turn out the finished nurse. Indeed if her potentialities are such, the student should be encouraged at graduating to continue her education into the university school, which should qualify her for positions of leadership in her chosen field of service.

Because of the apparent weakness in the undergraduate school in preparing the nurse for public health work, graduate courses at the present time are attempting to fill the gap, and to a considerable degree take the form of introductory courses for preparation in special fields of service. But as the undergraduate school meets its fuller obligation to the student, university courses should then be constructed on a much higher level.

Essentials in Training for Public Health Nursing

Time does not afford a detailed treatment of the essentials of an educational programme for the basic preparation of the public health nurse, but a few outstanding features should be emphasized.

First and foremost, the educational programme must be so organized and presented as to provide a real education for professional service rather than a more or less technical training to meet hospital needs. Certain traditional practices which have characterized nursing schools must give way to the more liberal views of a democratic education. The student should be given freedom to think for herself and be encouraged and guided in making decisions, through intelligent application of her scientific knowledge.

The course should provide for a closely related content of theory and practice, with emphasis on prevention and health aspects throughout. This suggests many adjustments, not only in subject matter, but in method. The student should have a good understanding of the biological and social sciences, and under efficient guidance and supervision students should be encouraged to make application in the interpretation not only of abnormal but normal situations. Opportunity should be given to nurse the patient as a whole, mind as well as body, and to incorporate health teaching with nursing care.

Because of the rapid development in the fields of mental hygiene and psychiatry, and the demand for qualified workers, particular emphasis should be given to teaching the students how to observe and interpret human reaction

in the light of healthy mental life, and a definite period of experience in psychiatric nursing should be provided.

It is impossible to develop a community point of view if the student is confined to the hospital environment. Therefore not only should the course include visits in the community but a definite period of time should be spent with some public health nursing organization to co-ordinate and consolidate the student's total experience.

A curriculum providing these educational opportunities would seem to meet the educational demands of the public health nurse for general practice, but its function will be determined in large measure by the intelligence and academic standing of the students themselves, and by the qualifications of the members of the teaching staff. The status of nursing education and the quality of nursing service are very definitely conditioned by the type of person permitted to enter the profession and a highly selective process should be employed for admitting students into the school. Scientific methods of selection are being employed in all educational fields and the nursing school should take advantage of these resources, which aid in evaluating intelligence and personality.

The qualification of staff members suggests not only a knowledge above that of the students and an appreciation of the art and science of teaching, but each should possess the health and community points of view. They should have a common understanding as to the possibilities in the courses for preparing the students for community service and should be able to project and extend the student's hospital experience into home and community situations. This suggests the very great need and importance of special preparation of teachers and supervisors in schools of nursing. The time has certainly come when those responsible for the education of the student nurse should not assume teaching responsibilities without special preparation in a university school.

One cannot conclude without reference to the type of course now established in the School of Nursing of the University of Toronto. The course is organized on a secure and independent basis, free of hospital obligations, and its objective is to prepare the student for the function of "nursing"; and because of the obvious future of the place of the nurse in the community, special emphasis is being placed on public health aspects. This experiment will be followed with professional interest, and it would seem that such a plan should meet much more fully the educational objective of public health nursing.

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J. G. Cunningham, B.A., M.B., D.P.H., *Industrial Hygiene.*
James Craigie, M.B., Ch.B., Ph.D., D.P.H. St. And., *Current Health Literature.*

THE EVOLUTION OF THE COUNTY HEALTH UNIT IN QUEBEC

FORTY-SEVEN years ago Quebec first recognized the necessity for governmental participation in the conservation of health. Responsibility in health matters previously had rested entirely with local municipalities. By the Act of 1860 ample powers had been granted municipalities to provide control of all sanitary matters. Very few municipalities, however, availed themselves of these powers and the creation of the Provincial Board of Health in 1887 was an attempt to stimulate municipalities to assume their proper responsibilities in safeguarding the health of their citizens. By 1891, 839 of the 876 municipalities had organized local boards of health.

After ten years of painstaking supervision by the Board, it was evident that most of the municipalities provided health protection in name only. The province was then divided into ten health districts, each under a resident, full-time, qualified inspector. A survey of the results in 1916, however, indicated that not more than 25 per cent of the local boards were functioning effectively. Two primary causes were responsible for this failure: lack of appreciation of the need for an adequate service and lack of trained personnel to provide it when a municipality was willing. Then, too, many municipalities were too small to be able to afford an organization. No amount of supervision as furnished by the health inspectors could improve the inadequate services provided by many municipalities.

On assuming direction of the Provincial Bureau of Health, which replaced the Provincial Board in 1922, Dr. Alphonse Lessard undertook to lay the foundation of an efficient rural health service by creating a province-wide interest in public health. Through addresses and news articles he interpreted the high infant mortality rate, the excessive toll from tuberculosis, and the unnecessary loss of life from typhoid and other diseases in such a manner that the government and the municipal authorities were enlisted in hearty support of measures that would improve the public health. Dr. Lessard was ably supported by the Church and in every municipality the programme of health education was aided by the local clergy. With the support of an aroused public, Dr. Lessard established in Beauce County in 1926 a full-time health service for that area, with a population of 43,000 and a number of small

municipalities within its confines. In a few months a second unit was established in the counties of St. Jean and Iberville and a third at Lac St. Jean. To-day 28 units serving more than one half of the rural population of the province are functioning. Such a rapid development is ample testimony of the effectiveness of the county health unit in Quebec. From the commencement of the work, generous financial assistance has been given to each unit for a period of three years by the Rockefeller Foundation, whose interest in the establishment of county health units in the various states of the Union has been continued in Canada. Without question, the remaining counties will be organized as soon as economic conditions permit, and without recourse to the recent legislation which authorizes the government to establish units wherever it deems them desirable.

In no part of Canada is the strength of local rural health administration greater, nor can it offer more promise, than in Quebec. There it has behind it the support of the people, the active co-operation of the Church, the able leadership of the Provincial Bureau of Health, and the hearty endorsation of the government. Quebec promises to be the first Canadian province to have the rural areas completely organized with full-time public health services.

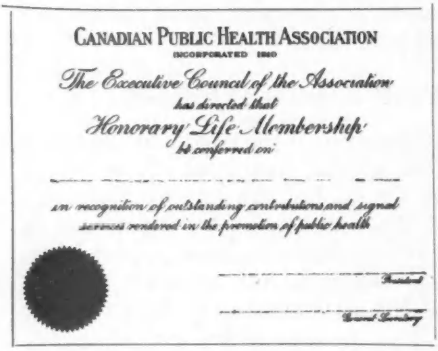
THE TREATMENT OF EARLY SYPHILIS

THE publication of this issue of a survey of the results of the treatment of early syphilis in the special treatment clinic of the Toronto General Hospital by Dr. E. J. Trow and his associates brings to light certain aspects of the problem of the treatment of syphilis which are challenging. It is recognized by every syphilologist that the earlier the patient receives treatment the more satisfactory are the results. In fact, it is only in the early stage of syphilis that the patient can be given a fairly good hope of cure. Through the agency of the excellent social service department of the clinic, many early contact cases were placed under treatment. On the other hand, the survey shows that of the 652 early cases studied, 267 discontinued treatment within a period of one year and could not be located.

This finding is startling and indicates the necessity for most careful consideration. There is no question that Ontario has a model venereal disease control Act, and likewise there is no question that the clinic possesses a most efficient follow-up system. It is probable that similar findings would be shown in other large cities, but the need for a better plan of assuring continuation of treatment seems urgent. It is hoped sincerely that further publications will be made from this clinic regarding social data and the results of treatment in later cases of syphilis. The amount of work entailed in analysing such a series of cases is appreciated only by those who are intimately associated with the conduct of such clinics, but the value of published findings to all who are interested in this field warrants every effort being made by hospitals and provincial governments to make this possible.

HONORARY LIFE MEMBERSHIP IN THE CANADIAN PUBLIC HEALTH ASSOCIATION

IT is very fitting that the Canadian Public Health Association should, from time to time, express appreciation of the distinguished services rendered in the promotion of preventive medicine in Canada by those who have rendered outstanding service for many years. The founders of the Association, with due recognition of the significance of such action, made suitable provision by establishing honorary life membership. The receiving of this honour in the Society of Medical Officers of Health of Great Britain, in the Royal Sanitary Institute, or in the American Public Health Association, marks the recipient as one of the distinguished leaders in public health. It is the desire of the Association in Canada that honorary life membership shall express in similar manner the highest appreciation of meritorious work.


CANADIAN PUBLIC HEALTH ASSOCIATION
INCORPORATED 1910

The Executive Council of the Association has directed that

Honorary Life Membership be conferred on

in recognition of outstanding contributions and signal services rendered in the promotion of public health

In formulating the conditions pertaining to the awarding of this honour, the Executive Council desired that it should be given only to those whose work has constituted a definite contribution to the cause of public health. Further, it was the desire of the Council that those who may have served locally in a municipality or in an institution should be considered equally with those who through their duties have been known nationally. The Council directed that this honour, when awarded, should be conferred at the opening session of an annual meeting, when it should be the duty of the President of the Association to present the certificate of honorary life membership to such members.

In the list of those who have been so honoured will be found the names of a number of the Canadian pioneers in public health. Last year the Association honoured three of its members at the annual meeting in Saint John, Dr. John A. Amyot, Dr. J. D. Pagé, and Dr. Charles A. Hodgetts. At the recent meeting in Montreal, Dr. Elzéar Pelletier, of Quebec, was the recipient of this honour.

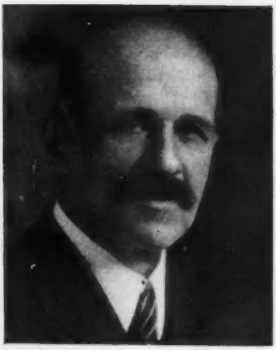
In the following words Dr. Alphonse Lessard, President of the Association, introduced Dr. Pelletier to the annual meeting and conferred on him life membership:

"Dans l'opinion de tous ceux qui se sont occupés d'hygiène publique au Canada, nul plus que le docteur Elzéar Pelletier ne mérite le certificat de membre honoraire de l'Association canadienne de santé publique.

"Dès la naissance de l'organisme destiné à protéger la santé de la population dans la province de Québec, en 1887, le docteur Pelletier fut nommé secrétaire et officier exécutif du Conseil d'hygiène qui fut alors institué et, de plus, lorsque l'ancien Conseil devint le Conseil supérieur d'hygiène de la province et fut transformé par la suite en Service provincial d'hygiène sous la responsabilité directe du Secrétaire provincial, il ne cessa de remplir ces fonctions. Bien qu'encore titulaire de la position qu'il a occupée durant tant d'années, le docteur Pelletier rend plutôt actuellement les services de 'consultant' à la disposition du directeur du Service. C'est dire que le nouveau membre honoraire de notre Association a vu naître et grandir tout le système d'hygiène publique en vigueur dans notre province et qu'il a participé dans une mesure considérable à cette création et à ce développement.

"D'une modestie pareille à nulle autre, il n'a jamais réclamé les honneurs qu'aurait dû lui apporter un travail de plus de trente ans, mais ses collaborateurs sont heureux aujourd'hui de lui rendre le témoignage qu'il a été, dans la lutte pour l'amélioration des conditions sanitaires chez-nous, un bon ouvrier.

"A titre de directeur du Service provincial d'hygiène, je suis heureux de rendre au docteur Elzéar Pelletier l'hommage de notre admiration et de la reconnaissance de tout le Service et j'estime que le certificat de membre honoraire de l'Association canadienne de santé publique qui lui est décerné est un honneur largement mérité."



DR. ELZÉAR PELLETIER

The signal contribution which Dr. Pelletier has made, as outlined in these words of introduction, places him in the forefront of those who have laid the foundations of public health in this country. For forty-seven years Dr. Pelletier has been continuously associated with the provincial health organization of Quebec. Such a record speaks of faithful and devoted service, of a rare measure of judgment, and of exceptional executive ability; but to those who have the privilege of knowing him, his kindliness and sympathetic interest in the problems of others are perhaps his outstanding attributes. In 1887, with the establishment of the first permanent health organization in Quebec, he was appointed Secretary and for fourteen years the entire work of supervision was conducted by him, an assistant being first appointed in 1902. After the enlargement and reorganization of the Department in 1922, Dr. Pelletier continued his responsibilities as Secretary and is still serving the Department as Consultant.

LT.-COL. JOHN A. AMYOT, C.M.G., M.B., was born in Toronto in 1867 and graduated in Medicine from the University of Toronto in 1891. He was early associated with university teaching, being appointed Demonstrator in Pathology in 1892, and continuing his teaching as Associate Professor of Pathology and Bacteriology until 1910 when he was appointed Professor of Hygiene. He was deeply interested also in surgery, being Assistant Surgeon at St. Michael's Hospital in 1894 and Surgeon in 1898. In 1900 he was appointed Director of the Provincial Board of Health Laboratory. Thus from 1900 to 1919 he was one of the leading supporters and guiding hands in the Provincial Department of Health and in the Faculty of Medicine of the University. Dr. Amyot had a leading part in introducing into Canada

the filtration and chlorination of water and the pasteurization of milk. During the Great War he was mentioned twice in despatches and was decorated by both the British and the French Governments.

DR. JOHN A. AMYOT

In 1919 the Federal Department of Health was established and Dr. Amyot became Deputy Minister. Under his supervision the department was organized and the co-operation of provincial and local health authorities throughout Canada secured. When in 1928 the Department of Soldiers' Civil Re-establishment and the Department of Health were united under the name of the Department of Pensions and National Health, he was made Deputy Minister of the joint department. Ill health necessitated his retirement in March, 1933. Few of Dr. Amyot's contemporaries have exercised a wider influence in their chosen field than he during a period of nearly forty years and few indeed have endeared themselves to such a wide circle of friends.

J. D. PAGÉ, M.D. was born in St. Casimir, Quebec, in 1861. In 1887 he was graduated in medicine from Laval University and practised for some years in the Eastern Townships. In 1904 he entered the service of the Federal Government as Medical Superintendent of the Immigration Hospital at the port of Quebec. In 1905 the medical officers were increased to three, with Dr. Pagé as Chief.

DR. J. D. PAGÉ

During the Great War Dr. Pagé served with the Canadian military forces at the port of Quebec, with the rank of Major, working among returned soldiers. In 1918 he was appointed by the Dominion Government a member of a commission to investigate immigration offices and quarantine stations in Canada. In 1920, on the creation of the Federal Department of Health and the transfer of Immigration Medical and Quarantine Services to this department, Dr. Pagé was appointed Chief of these divisions. Under his able supervision the services were brought to their present efficiency. Due largely to his initiative the Overseas Immigration Medical Service was established, enabling the physical and mental status of prospective immigrants to be determined prior to embarking. After twenty-eight years' faithful service Dr. Pagé retired in 1932. He now lives at Farnham, Quebec.

No truer appreciation of Dr. Pagé's personality could be offered than that written by Dr. Peter Bryce in December, 1905, to Sir Wilfrid Laurier: "Dr. Pagé has the scientific spirit of a searcher after

truth, associated with unusual perseverance, intelligent direction of his energy, and the highest moral qualities."

COLONEL CHARLES A. HODGETTS, C.M.G., V.D., M.D., L.R.C.P. (Lond.), D.P.H., was born in Toronto in 1859 and graduated in medicine from Victoria University. After post graduate courses in the hospitals of London and Birmingham he returned to Canada and began practice in Toronto, subsequently acting in a temporary capacity as Medical Inspector for the Provincial Board of Health, which position was made permanent a few years later, with the added duties of medical health officer for the unorganized portions of the province. In 1903 he succeeded the late Dr. Peter Bryce as Chief Health Officer and Secretary of the Board, serving in this capacity for seven years. The reports of the Department reveal the extent of these services and the foundation which was laid for the present development of public health in Ontario. In 1910 he was invited to become Medical Adviser to the Public Health Committee of the Conservation Committee of Canada, and to this body he gave invaluable assistance. Perhaps one of his chief works under this Commission was the directing of public attention to the need of better housing conditions and proper town planning. Shortly after the outbreak of the War, on the sudden death of the late Colonel Burland of Montreal he was requested to serve as Chief Commissioner overseas for the Canadian Red Cross, in which capacity he served until April 1, 1918, when he was appointed Assistant Commissioner of the British Ministry of National Services for Ireland, with headquarters in Dublin. For his war work he was mentioned in despatches and decorated by the British, Italian and Belgian governments. Colonel Hodgetts has done more for the first aid movement in Canada than any other person, his association with the Saint John Ambulance Association dating from 1890. For many years he was Honorary Secretary of the Dominion Council of that organization. In 1910 he was made a Knight of Grace of the Order of St. John of Jerusalem and was appointed to the Council and elected to the General Executive Committee, later serving as Honorary Secretary until the outbreak of the war. On his return to Canada he resumed the duties of Honorary Secretary and in 1921 was appointed Director General, a position which he held until his resignation in October, 1932. Dr. Hodgetts has exercised a wide influence in public health, and in official and voluntary capacities he has given generously to its promotion.

DR. CHARLES A. HODGETTS

To these new honorary life members the Association extends felicitations, uniting in the wish that they may have health and strength and long be spared to enjoy a well-earned leisure and opportunity for the cultivation of their many other interests.

EPIDEMIOLOGY AND VITAL STATISTICS

Endemic Index for Diphtheria, Scarlet Fever, Measles and Whooping Cough in the Various Provinces of Canada, July, 1933-June, 1934

Department of Epidemiology and Biometrics, School of Hygiene, University of Toronto

IN the May issue of the JOURNAL the endemic indices for the four common communicable diseases of childhood were presented for nine months of the year commencing with the average incidence in the preceding five-year period for diphtheria and scarlet fever, and for a ten-year period in measles and whooping cough. The black line presents the morbidity

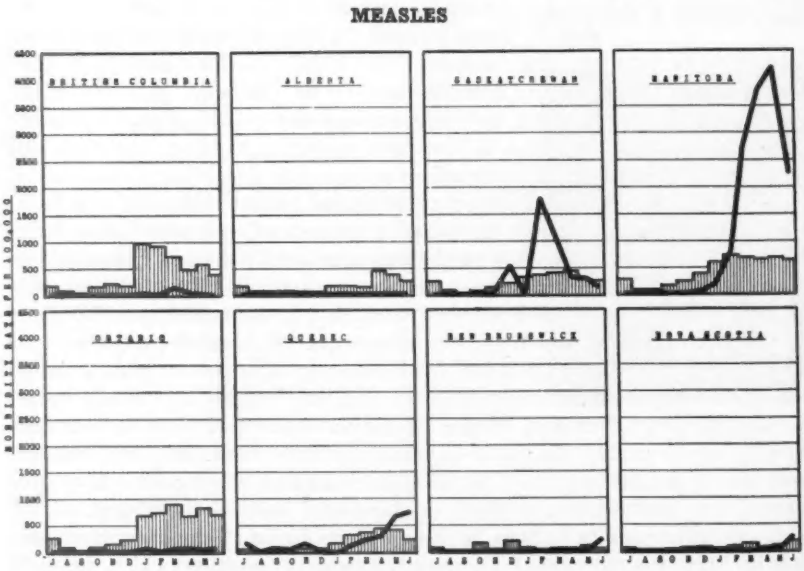


Figure I.—Monthly morbidity rates, July 1933-June 1934, for eight provinces of Canada, with the endemic index. The morbidity rate is represented by the black line and the endemic index as the shaded bars.

July, 1933. These are now published for the twelve months' period. The period July to June has been selected as a better picture of the occurrences of these diseases. In each graph the shaded columns represent rate. The monthly morbidity rates are used in each instance. For comment on the incidence of these diseases as here presented, reference may be made to the article in the May issue of the JOURNAL, p. 247, entitled "The Use of

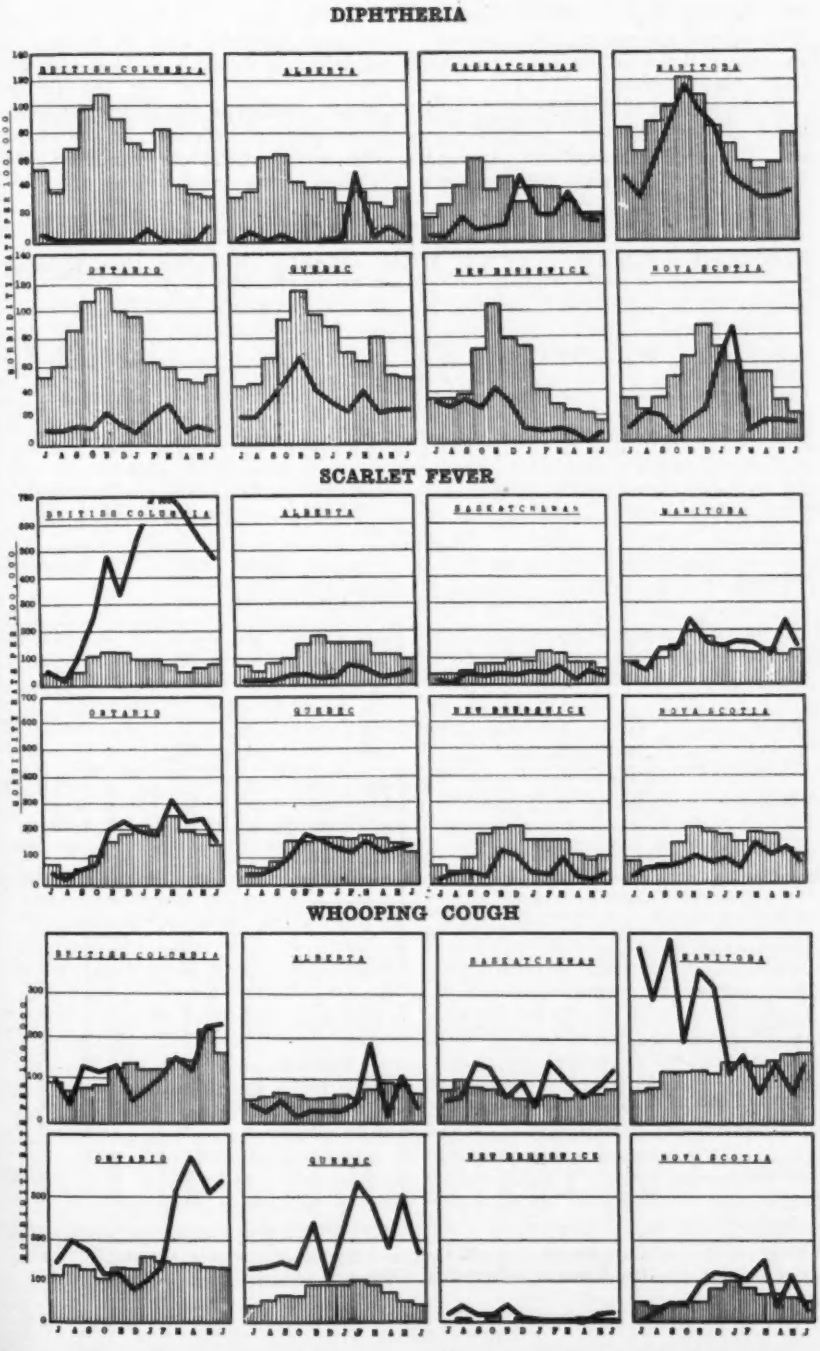


Figure II.—Monthly morbidity rates, July 1933-June 1934, for eight provinces of Canada, with the endemic index. The morbidity rate is represented by the black line and the endemic index as the shaded bars.

the Endemic Index in Presenting the Incidence of Communicable Diseases," in which the value of the endemic index was discussed.

At the request of the Editorial Board, the Department of Epidemiology and Biometrics, School of Hygiene, University of Toronto, will continue the preparation of the endemic index for these diseases. The indices will be published at intervals of four months, presenting the data for the period July to October in the December issue, November to February in the April issue, and the complete year from July to June in the August issue.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—April, May, June, 1934

Disease	Month	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	April	0	6	2	57	25	18	29	2	0
	May	0	6	0	66	30	19	13	5	1
	June	0	5	2	66	22	23	12	2	6
Scarlet Fever	April	2	48	9	280	668	61	15	15	380
	May	1	60	6	306	692	141	38	19	321
	June	3	35	12	343	475	84	29	24	282
Measles	April	2	18	1	755	272	2336	249	3	28
	May	0	21	12	1433	220	2569	244	5	7
	June	0	126	75	1912	251	1373	131	2	7
Whooping Cough	April	0	20	1	468	1199	90	53	8	75
	May	0	47	5	505	917	44	76	66	134
	June	0	13	6	443	987	86	100	20	136
German Measles	April	0	33	0	38	10	2	8	3	14
	May	0	103	2	20	28	2	3	0	6
	June†	0	103	0	21	10	0	18	1	5
Mumps	April	0	0	0	430	952	28	23	1	207
	May	0	6	1	301	864	63	88	4	201
	June	0	5	1	155	881	50	17	12	200
Smallpox	April	0	0	0	0	0	0	0	0	1
	May	0	0	0	0	0	0	0	0	0
	June	0	0	0	0	0	0	0	0	0
Cerebrospinal Meningitis	April	2	2	0	5	5	1	3	0	1
	May	0	0	0	7	0	0	0	0	1
	June	1	0	1	4	3	0	0	0	0
Anterior Poliomyelitis	April	0	1	0	1	3	0	0	1	2
	May	0	0	0	5	0	0	1	0	0
	June	0	1	1	3	4	0	0	0	2
Typhoid Fever	April	0	0	2	87	34	11	14	3	2
	May	0	0	7	102	31	13	6	2	3
	June	0	1	5	69	22	1	2	1	4
Trachoma	April	0	0	0	0	0	5	12	2	1
	May	0	0	0	0	2	1	4	0	8
	June	0	0	0	0	7	0	4	0	4

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not listed since June 23rd, 1934.

PUBLIC HEALTH EDUCATION

Cancer Prevention Week in Quebec

E. COUILLARD, M.D., D.P.H.

Professor of Hygiene, Laval University
Inspector, Provincial Bureau of Health, Quebec

AMONG the efforts which have been made for the control of cancer in Canada during the past year, the holding of a "Cancer Prevention Week" in the city of Quebec last April is outstanding. The purpose was to bring before the public the urgency of early diagnosis and early treatment and to inform them of the modern clinic facilities which have been provided. The holding of the "Week" was made possible through the hearty support of Dr. Alphonse Lessard, Director of the Provincial Bureau of Health, who has been deeply interested in the work of the control programme which has been conducted by Laval University. Following a visit of Professor Roussy, Dean of the Faculty of Medicine, Paris, and founder and Director of the Cancer Institute, this work was established in 1930 at Laval University, headquarters for the work and propaganda being provided at the University, a diagnostic clinic at Hôtel-Dieu and 2 treatment clinics, one in Saint Sacrament Hospital and the other at Hôtel-Dieu. A diagnostic clinic and the treatment clinics have been held twice weekly. Adequate laboratory facilities are provided and the necessary microscopic examinations of tissues are undertaken for the hospitals of the eastern part of the province, from Three Rivers to Chicoutimi in the north, to Gaspé in the east, and even as far as Moncton, N.B., for Hôtel-Dieu located in that city. Through the co-operation of the Provincial Bureau of Health, literature has been made available for distribution.

With the organization for diagnosis and treatment functioning, it was realized that a campaign of public education was necessary if the programme of cancer prevention was to gain momentum. Dr. C. Vezina, Professor of Surgery and Director of the Anti-Cancer Centre, submitted to the Provincial Bureau a plan for the holding of an "Anti-Cancer Week" in the city of Quebec. In preparation for this event the local press were supplied with a series of articles on cancer which were published during the preceding two months. A few days before the opening of the "Week", advertisements announcing the date and place of the exhibition were made and literature cards and news sheets were displayed in store windows, tramways and automobiles.

The exhibition was held in *le Palais Montcalm*. The municipal authorities placed at the disposal of the committee one of the spacious, well lighted halls. The public attended between 2 and 6 in the afternoon and from 7 to 10 in the evening. Suitably displayed were actual photographs of patients suffering from cancer, showing the results of treatment. Six large charts showed in striking manner the mortality from cancer in the different countries of Europe and in each province of Canada, with detailed information relating to the province of Quebec. The technique of microscopic examination of tissues was suitably demonstrated in the following manner. The visitor, after being shown a microscope, was directed by an arrow to three excellent displays of micro-photographs, in natural colours, of cancerous lesions, including lesions of the central nerv-

ous system, various organs, the bones and skin. These micro-photographs, on glass, were illuminated, permitting of examination as transparencies. To Dr. Edouard Morin, Chief of the Laboratories of Saint Sacrament Hospital, is due the credit for the preparation of these ninety micro-photographs which constituted an outstanding feature of the exhibition. Gross pathological specimens of cancer were exhibited in the centre of the room, showing lesions of all the organs of the body. Special attention was paid to the arrangement of this portion of the exhibit, so that lay persons might better understand the nature of cancer. Suitable inscriptions and arrows were used and the whole presentation was most successfully arranged by Professors Vallée and Berger of the anatamo-pathological laboratory of Laval University. Thus the contribution of the University in this campaign of education was of great importance.

The visitors were conducted through the exhibit by physicians from the University hospitals. Proceeding from one exhibit to another, they were given short but clear explanations. Literature was distributed, particularly to adults. Of special interest was a pamphlet presenting the subject of cancer, its causes and clinical forms, its detection and actual treatment, prepared by the members of the staff of Laval University.

The widespread distribution of blotters and cards was a feature of the week. The advertising cards,

BLOTTER DISTRIBUTED DURING CANCER PREVENTION WEEK.

whether large or small, the blotters, and the other literature presented an allegory of cancer, which was represented by the figure of a crab. In this picture the crab, in striking green or red colour, casts its shadow ahead, but its forward progress is impeded by a sword, the symbol of surgery, and by a lightning-like ray, a symbol of electricity and radium. Two crabs of gigantic proportions adorned the side panels of the entrance to the hall. Constantly used in the advertising and publicity was the message, "Kill Cancer before it Kills You", conveying in a striking manner the key note of the "Week"—the prevention of cancer deaths.

Moving picture films were used to

great advantage. An educational film prepared by La Ligue Anti-cancéreuse of France, and loaned through the courtesy of the Provincial Bureau of Health, was presented daily in the concert hall. This film, entitled "Le Cancer, Fléau Social" ("Cancer, a social disease"), attracted capacity audiences, approximately 1,300 persons attending each showing. Suitable explanation was given by a physician and the presentation occupied almost an hour.

During the week radio talks were delivered by six physicians, thus keeping the subject of cancer before the members of many families for fifteen minutes each day. The opening talk was given by Dr. Lessard, who chose as his topic "Cancer, a Social Disease".

The local press gave detailed reports of the events during the week, making a social feature of it and affording every assistance in the form of publicity. With the co-operation of Dr. Lessard, a moving picture film was prepared showing scenes of the crowds in the exhibition halls and various specimens were filmed. It is planned to add this film to the French film referred to, thus increasing the local interest in its other showings in the province.

It is hoped that this campaign, so successfully inaugurated in the city of Quebec, will be continued in different cities throughout the province.

Appointment of John Michael Uhrich, Ph.C., M.D., as Minister of Public Health and Provincial Secretary, Saskatchewan

IN the recent elections in Saskatchewan, Dr. John M. Uhrich was elected to the Provincial Legislature, succeeding Dr. F. D. Munroe as Minister of Public Health and in addition assuming the duties of Provincial Secretary.

The Hon. J. M. Uhrich, Ph.C., M.D.

The Honourable Dr. Uhrich was born at Formosa, Ontario, in 1877. He attended Walkerton High School and was graduated in medicine from the Northwestern University, Chicago, in 1907. He practised at Rosthern, Saskatchewan, for a number of years and was elected to the Saskatchewan Legislature to represent the constituency of Rosthern in 1921. In 1922 Dr. Uhrich was appointed Provincial Secretary and Minister in Charge of the Bureau of Public Health, and on the creation of the Department of Public Health in 1923 he became Minister of that Department. From 1926 to 1929 he served as Minister of the Department of Public and Public Works. In resuming the office of Minister of Health, Dr. Uhrich brings to the appointment an intimate knowledge of the health problems of Saskatchewan gained not only from his wide experience in general practice, but from his previous service as a member of the Cabinet. As Provincial Secretary, his knowledge of the problems of medical care, old age pensions and other social legislation, gained during this experience, will be most valuable to the Cabinet.

CURRENT HEALTH LITERATURE

These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (after three days) is requested in order that the journals may be available to other readers.

Epidemiological Significances of the Serological Types of Pneumococci

A study was made of the incidence of the different types of pneumococci in patients and nurses of a fever hospital in Glasgow for a period of one year. In the case of the selected healthy community—the nurses—monthly examinations were made. Sputum or mucus from the back of the throat was injected intraperitoneally into mice, with subsequent serum typing. Some of the conclusions from this study were as follows: (1) Acute pneumonia due to Types I and II has its highest prevalence in the spring. (2) Group IV pneumococci show increased activity in periods of epidemic prevalence. (3) In the vast majority of cases the development of Types I and II is autogenous; they seldom promote the spread of the disease by direct contact but when responsible for a case of acute pneumonia, however, they readily spread to contacts and produce the carrier state. (4) Secondary contact carriers are infrequent. (5) Type III pneumococcus is primarily saprophytic in character and was recovered from 17 per cent of normal persons examined. (6) The use of antisera for Types IV-XXXII is of considerable value in determining whether any one type is more prevalent or more fatal.

I. M. Christie, Lancet, *227*: 39 (July 7), 1934.

Industrial Intoxication following Skin Sorption

No adequate body of information is available regarding the mechanisms of skin absorption and there is need for inquiry regarding the dangers of industrial skin exposure, which is likely to lead to practical damage in the case of nitrobenzol, anilin, hydrocyanic acid, phenol and related compounds.

Carey P. McCord, Am. J. Pub. Health, *24*: 677 (July), 1934.

The Human Factor in Accidents

A large group of accidents on the road and in the factory and workshop are attributable not so much to physical as to mental occurrences. These accidents are not equally spread among all who might be subject to them. They are more frequent among novices, young and old workers, and among the "accident-prone", regardless of age; and during conditions of overpressure, worry and mental strain. As accidents are especially likely to occur when unselected persons are employed in dangerous operations, the thing to do is to eliminate these "accident-prone" persons. A beginning might well be made in the selection of drivers of motor vehicles. Accidents are in a great measure due to the unconscious of the human factor and the remedies lie in selection, training, and adapting as perfectly as possible external conditions to mental requirements.

Charles S. Myers, The Human Factor, *8*: 266 (July-August), 1934.

Pollution Indices of Natural Bathing Places

For the purpose of this study, data were obtained on a lake ($11 \times 1\frac{1}{4}$ miles) with a restricted bathing beach under all conditions. The colon indices and the 57° C. total count did not always respond to changes in bathing loads. The streptococcus index fluctuated with the bathing load and this organism disappeared overnight. This and previous investigations demonstrate that streptococci do measure the pollution introduced by the bather but a large volume of data must be collected under various conditions before a standard can be arrived at.

W. L. Mallmann and Adolph Sypien, Am. J. Pub. Health, *24*: 681 (July), 1934.

Place Variation in the Death Rates from Puerperal Septicaemia

Statistical analysis reveals that more cities in the United States have high death rates from puerperal septicaemia and more cities have low rates than is to be expected on the basis of chance alone. The hope is expressed that the conditions favourable to low rates might be determined and duplicated in the cities with high rates.

G. E. Harmon, Am. J. Pub. Health, *24*: 732 (July), 1934.

The Mortality from Heart Disease: A Challenge

The death rate from heart disease (U.S. Census Bureau mortality statistics) has increased from 132 per 100,000 in 1900 to 224 per 100,000 in 1932. The interpretation of this increase is controversial but clinicians practising through this period are emphatic that heart disease is more commonly encountered now. Age incidence statistics show that the increase in mortality has occurred in individuals past 30 years of age. The four primary causes of heart disease are discussed and the necessity for the development of rational methods for the prevention and treatment of essential hypertension and rheumatic fever is pointed out. Means are available for the eradication of syphilitic heart disease but in the case of arteriosclerotic heart disease there is little to hope for.

Charles T. Stone, J.A.M.A., *103*: 151 (July 21), 1934.